PASSIVE SOIL GAS INVESTIGATION REPORT
2060 South Avenue and 1745 Toomes Avenue
Corning, California

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Prepared for

Greben and Associates
1231 State Street, Suite 200
Santa Barbara, California 93101

Prepared by

WEST
Environmental Services & Technology
828 Mission Avenue, 2nd Floor
San Rafael, California 94901
415/460-6770 Fax 415/460-6771
main@w-e-s-t.com

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All engineering information, conclusions, and recommendations contained in this report have been prepared by a California Professional Engineer. All hydrogeologic and geologic information, conclusions and recommendations contained in this report have been prepared by a California Registered Geologist.

_____ _____

Peter M. Krasnoff
California Registered Civil Engineer (44031)

Date

_____ _____

Peter E. Morris
California Registered Geologist (7084)

Date

1.0 INTRODUCTION

This *Passive Soil Gas Investigation Report* ("Investigation Report") has been prepared by West Environmental Services & Technology, Inc., (WEST) at the request of Greben & Associates, on behalf of their client the N. M. Duncan Q-Tip Trust (formerly doing business as Orchard Carriers, Inc.) for the properties located at 2060 South Avenue and 1745 Toomes Avenue, Corning, California ("the Site;" Figure 1-1). This Investigation Report was prepared in response to the California Regional Water Quality Control Board – Central Valley Region's ("Regional Board") request to conduct investigations to identify potential source(s) of volatile organic compounds (VOCs) at the Site.

Pursuant to the January 8, 2003 Regional Board request, an *Amended Soil Gas Investigation Work Plan* ("Work Plan;" WEST, 2003) was prepared that outlined tasks to be performed. The Work Plan was approved by the Regional Board August 27, 2003. The tasks outlined in the Work Plan included: 1) a review of available historical documents and regulatory records, 2) a review of available information regarding hazardous materials storage, handling and disposal practices, 3) a utility survey and 4) a passive soil gas survey. This Investigation Report presents the findings of the investigations conducted pursuant to the approved Work Plan.

1.1 BACKGROUND

Between 1994 and 2000, the Regional Board conducted groundwater sampling of 17 private water supply wells located east and downgradient of the Site. Groundwater samples collected by the Regional Board were analyzed using United States Environmental Protection Agency (USEPA) Method 524.2. Laboratory analysis of groundwater samples from private water supply wells revealed the presence of chlorinated volatile organic compounds (CVOCs). The CVOCs detected include trichloroethene (TCE) up to 9.6 micrograms per liter (µg/l) and 1,2-dichloroethene (DCE) up to 8.8 µg/l.

Due to the presence of CVOCs in groundwater, the City of Corning requested the environmental consulting firm of Haling and Associates to investigate the nature and extent of chlorinated solvent releases at the former Dudley and Petty Truck Stop ("former Truck Stop"). Haling and Associates performed soil gas, soil and groundwater investigations during 2001. The investigations also included the installation of monitoring wells and initiation of quarterly groundwater monitoring in 2002 (Haling, 2002).

Analytical results of active soil gas samples collected during 2001 indicated two areas of potential CVOC releases. The two areas identified during the 2001 investigations included the old service station area located in the western portion of the former Truck Stop where PCE and TCE were reported to be present in soil gas. The second area of potential CVOC releases identified was the vicinity of the above ground storage tanks (ASTs) located along the eastern property boundary of the former Truck Stop where PCE and TCE were reported to be present in soil gas.

Quarterly monitoring of groundwater at the former Truck Stop revealed tetrachloroethene (PCE) in groundwater up to 10 µg/l, TCE up to 82 µg/l and DCE up to 712 µg/l. Laboratory analysis of groundwater samples collected from monitoring wells at the Site revealed lower concentrations than those found at the former Truck Stop with PCE up to 1.2 µg/l, TCE up to 53 µg/l and DCE up to 290 µg/l.

Haling and Associates concluded that there was not sufficient data to support the conclusion that the former Truck Stop was the source of the CVOCs detected in the samples from the private water supply wells (Haling, 2001). The Regional Board concluded that the 2060 South Avenue and 1752 Toomes Avenue properties should be investigated as potential sources of CVOC to domestic groundwater supply wells (Regional Board, 2002a).

The Regional Board issued a California Water Code 13267 letter on January 8, 2003, to the current owners and operators at the 2060 South Avenue and 1745 Toomes Avenue properties. The Regional Board letter requested that the property owners individually or together submit a

work plan to investigate potential releases of hazardous materials at the two properties (Regional Board, 2003a).

WEST submitted a work plan to the Regional Board in August 2003 to conduct a review of historic chemical use and a conduct soil gas sampling at the two properties. The WEST investigation Work Plan was approved by the Regional Board on August 27, 2003 (Regional Board, 2003b).

1.2 SUMMARY OF FINDINGS

This Investigation Report presents a review of the history and chemical use at the Site and the former Truck Stop property, a summary of data generated from previous and recent investigations and a Conceptual Site Model (CSM) that describe the fate and distributions of the CVOCs in soil gas, soil and groundwater. Based on an analysis of the data, the CSM was constructed that indicates that the occurrence of CVOCs at the Site and downgradient private water supply wells appears wholly attributable to releases at the former Truck Stop. Therefore, additional investigations at the Site do not appear to be warranted.

This conclusion is based on the following:

- The documented historical chemical use at the Site did not include CVOCs.
- Operations at the former Truck Stop included the use of PCE.
- Site investigation data revealed:
    - PCE is the only CVOC detected in soil gas at the Site.
    - The highest concentration of PCE in soil gas was measured in the sampler located closest to the former Truck Stop.

- PCE concentrations in soil gas decreased on the Site farther from the former Truck Stop.

- TCE and DCE are the primary CVOCs found in groundwater at the Site, with the highest detection of PCE in groundwater at 1 µg/l.

- Benzene was the only non-chlorinated petroleum related VOC detected in soil gas that was also detected in groundwater. The highest concentration of benzene was reported at 0.69 µg/l.

- Investigations at the former Truck Stop have revealed that:

  - PCE in soil gas was highest near the former tire store and decreased in concentration closer to the Site.

  - PCE was detected in soil gas samples from every location where CVOCs were detected.

  - PCE degradation products, TCE, DCE and CE are present in localized areas near three petroleum hydrocarbon release sources, in the vicinity of the former tire store, card lock fuel islands and the ASTs.

  - The release of petroleum hydrocarbons at the former Truck Stop resulted in conditions conducive to the formation of the PCE degradation products, i.e., TCE, DCE and CE.

  - PCE was detected in groundwater in the vicinity of the tire shop and the relative concentration of the degradation products increases in the downgradient direction toward the private water supply wells.

1.3 ORGANIZATION OF REPORT

This Investigation Report is organized as follows:

Section 2.0 – Site Description

Section 3.0 – Summary of Investigations

Section 4.0 – Data Evaluation

2.0 SITE DESCRIPTION

The approximate 3.8-acre Site includes the 2.3-acre parcel located at 2060 South Avenue and the 1.5-acre parcel at 1745 Toomes Avenue, Corning California (Figure 2-1). The assessors parcel numbers (APNs) for the two properties associated with the Site are APNs 087-050-65 and 087-050-67.

The 2060 South Avenue portion of the Site consists of two buildings occupied by a retail hardware store, McCoy's Ace Hardware, and an agriculture hauling bin manufacturing operation, Orchard Carriers. The 1745 Toomes Avenue portion of the Site is currently occupied by Omega Waste Management. Omega Waste Management conducts refurbishing of waste refuse compactors. The Site is bordered on the south by South Avenue, the former Truck Stop to the west, Toomes Avenue and private residences to the east and vacant lands to the north (Figure 2-1).

2.1 REGIONAL GEOLOGIC AND HYDROGEOLOGIC SETTING

The Site is located within the Great Valley Geomorphic Province of Northern California. The geology consists of the Pleistocene Riverbank Formation and the Plio-Pleistocene Tehama Formation. The Pleistocene Riverbank Formation contains unconsolidated interbedded fluvial gravels, sands and silts with a thickness between 5 and 20 feet (Regional Board, 2002b). The Riverbank Formation is underlain by the Plio-Pleistocene Tehama Formation and is described as a regional aquifer consisting of consolidated grayish green sandstones, siltstones and conglomerates (Regional Board, 2002b).

The Tehama Formation is also described as a regional aquifer. Local water supply wells have been constructed in the Tehama Formation at depths greater than 200 feet below ground surface (Regional Board, 2002b). The California Department of Water Resources reports that the regional direction of groundwater movement is to the southeast (Lawrence, 1999).

2.2 SITE GEOLOGY

The geology at the Site consists of unconsolidated coarse-gained units interbedded with fine-grained units. The coarse-grained units consist of silty sands to sandy gravels with thicknesses ranging between 15 feet and 20 feet. The fine-grained units consist of clayey silts, sandy silts and silts with thicknesses ranging between 2 feet and 10 feet (Regional Board, 2002b). The fine-grained units separate the coarse-grained units and may be discontinuous across the Site (Regional Board, 2002a).

2.3 SITE HYDROGEOLOGY

The hydrogeology at the Site is comprised of unconfined, semi-confined and confined water-bearing zones within the upper 70 feet of the Site. The water bearing zones are divided by less permeable zones acting as aquitards. The aquitards may not be continuous across the Site (Regional Board, 2002a).

The unconfined water-bearing zone is the upper most unit containing silty sands and sandy gravels between the ground surface and a depth of approximately 20 feet below ground surface. The confining layer between the upper and intermediate water-bearing units may be discontinuous in the vicinity of the Site. Depth to water in the unconfined water-bearing zone has been measured between 7.17 feet and 12.46 feet below ground surface (Haling, 2002). Groundwater flow in the unconfined water-bearing zone is reportedly northwest to southeast at a gradient ranging from 0.005 feet per foot to 0.05 feet per foot (Haling, 2002).

The semi-confined water-bearing zone is reportedly the intermediate unit containing sands and sandy gravels between approximately 30 feet and 60 feet below ground surface (Regional Board, 2002a). The confining layer between the intermediate and deep water-bearing units may be discontinuous in the vicinity of the Site. Depth to water in the semi-confined water-bearing zone has been measured between 20.11 feet and 27.89 feet below ground surface (Haling, 2002).

Groundwater flow in the semi-confined water-bearing zone is generally to the east at a gradient of approximately 0.001 feet per foot (Regional Board, 2002b).

The confined water-bearing zone is reportedly the deep unit containing sands and sandy gravels between approximately 60 feet and 70 feet below ground surface. Depth to water in the confined water-bearing zone has been measured between 25.92 feet and 33.49 feet below ground surface (Haling, 2002). Groundwater flow in the confined water-bearing zone is generally to the east (Regional Board, 2002b).

2.4 SITE HISTORY AND LAND USE

The former Orchard Carriers operated on the 2060 South Avenue property between 1970 and 1994. The former Orchard Carriers operated on the 1745 Toomes Avenue property between 1970 and 1989 (Regional Board, 2002a). Orchard Carriers fabricated metal trailers for use in orchard harvesting. Operations included metal cutting, welding and painting.

Omega Waste Management, Inc. (OWM) has operated at the 1745 Toomes Avenue property from December, 1989 to the present (Regional Board, 2002a). OWM conducts refurbishing of waste compactors and operations include welding, painting and metal finishing.

Historical aerial photographs and available hazardous materials storage, handling and disposal records were reviewed to identify potential recognized environmental conditions associated with the Site and neighboring areas. Copies of the aerial photographs reviewed are included in Appendix A.

2.4.1 Historical Aerial Photographs

Historical aerial photographs from 1972, 1976, 1979, 1983 and 1998 were reviewed to identify potential environmental conditions associated with the Site and neighboring areas.

2.4.1.1 AERIAL PHOTOGRAPH - 1972

A review of the 1972 aerial photograph revealed a single building structure present at the 2060 South Avenue portion of the Site. Areas of outdoor storage were observed to the north of the building structure along the perimeter. The 1745 Toomes Avenue property was observed as vacant land.

Neighboring properties visible include the former Truck Stop to the west. Several building structures were observed present at the former Truck Stop property. Five ASTs were observed on the former Truck Stop property adjacent to the western boundary of the Site. A north to south trending drainage feature was observed between the ASTs and one of the building structures. Holding ponds were also observed in the northeast corner of the former Truck Stop. The areas south, east and north of the Site were observed as orchards, vacant land and private residences.

2.4.1.2 AERIAL PHOTOGRAPH - 1976

A review of the 1976 aerial photograph revealed the addition of a building structure on the 1745 Toomes Avenue property. Areas on the northern portion of the Site appear to have been used for outdoor storage. Features at the former Truck Stop include additional ASTs installed adjacent to the Site and sediment deposits on the asphalt pavement from runoff east to west from the ASTs. The areas south, east and north of the Site are similar to the 1972 aerial photograph.

2.4.1.3 AERIAL PHOTOGRAPHS – 1979 AND 1983

A review of the 1979 and 1983 aerial photograph revealed the addition of a building structure on the 2060 South Avenue property to the north of the building observed in the 1972 and 1976 aerial photograph.

2.4.1.4 AERIAL PHOTOGRAPH – 1998

A review of the 1998 aerial photograph revealed areas with outdoor storage at the Site. Features at the former Truck Stop include the presence of a bermed area on the northwest corner of the property. A small building structure observed in this area on the previous aerial photographs was not observable. Areas to the south of the Site appear to be developed as semi-truck retail facilities. Areas to the east and north of the Site appear to be vacant lands and private residences.

2.4.2 Chemical Use and Disposition at 2060 South Avenue

On November 12, 2002, Mr. Lucero, a local private well owner, reported to the Regional Board information from a "knowledgeable party" regarding historical solvent spills at the former Orchard Carriers (Regional Board, 2002c). Mr. Lucero reported, "around the 1970s and 1980s the former Orchard Carriers obtained military surplus vehicles and parts cleaning solvents." The solvent was reported as being used for degreasing and paint stripping raw metal before cutting and welding (Regional Board, 2002c).

WEST performed a review of the Tehama County Environmental Health Department (TCEHD) hazardous materials files for the 2060 South Avenue portion of the Site. The file review did not reveal that operations at 2060 South Avenue included the use, storage or disposal of CVOCs.

2.4.3 Chemical Use and Disposition at 1745 Toomes Avenue

Hazardous waste inventory statements reviewed at TCEHD and a site reconnaissance with Omega Waste Management personnel, revealed the use of the following chemicals: diesel fuel, hydraulic oil, mineral spirits, paint, paint thinner, oxygen and acetylene gases, Advantage 115 Gun Wash Solvent and Chem-Dip Carburetor and Parts Cleaner. A summary of the characteristics of the chemicals used at 1745 Toomes Avenue is provided below.

2.4.3.1 DIESEL FUEL

Diesel fuel is delivered in 55-gallon steel drums and stored on a secondary containment tray outdoors (NWHMIS, 2003). Diesel fuel typically contains a mixture of aliphatics (paraffinic and olefinnic) and aromatic hydrocarbons primarily with 11 carbon atoms (C11) to C20 with less than 0.01 percent benzene (Fueltech, 2003).

2.4.3.2 HYDRAULIC OIL

Hydraulic oil is used during compactor refurbishment at OWM. Hydraulic oil is delivered in 55-gallon drums and stored upon a secondary containment tray within the building. Waste hydraulic fluid is shipped off-site for disposal as non-RCRA hazardous waste (NWHMIS, 2003).

2.4.3.3 MINERAL SPIRITS

Mineral spirits are used for hydraulic parts cleaning at OWM and are stored in a 55-gallon tote bin located inside the building. Mineral spirits are derived from the light distillate fractions during the crude oil refining process and are composed of the C6 to C11 compounds, with the majority of the relative mass composed of C9 to C11 (NPS, 1997).

2.4.3.4 PAINTS AND PAINT THINNER

Paints are used for equipment painting at OWM and are delivered in 55-gallon drums and stored on a secondary containment tray within an outside storage shed (NWHMIS, 2003). Paint thinner is used for cleaning and is stored in 5-gallon buckets.

2.4.3.5 OXYGEN AND ACETYLENE

Oxygen and acetylene gases are used for welding metal parts at OWM. Oxygen and acetylene are stored as compressed gases in steel pressure bottles located in the building on the property (NWHMIS, 2003).

2.4.3.6 ADVANTAGE 115 GUN WASH SOLVENT

Advantage 115 Gun Wash Solvent was reported as being used to clean cardboard bailers at OWM. Steam cleaning was reported as the typical method of cardboard bailer cleaning (Hunt, M., Personal Communication, October 2, 2003). The Advantage 115 Gun Wash Solvent observed at OWM was stored in a 5-gallon drum and the label identified acetone, toluene, xylenes, methyl alcohol, naphtha and ethyl benzene as components of the solvent.

Wastewater resulting from cardboard bailer cleaning flows to a concrete basin located to the east of the OWM building. The concrete basin has dimension of approximately 1 meter long, 0.5 meters wide and 0.9 meters deep. OWM personnel reported that wastewater entering the basin is evaporated.

2.4.3.7 CHEM-DIP CARBURETOR AND PARTS CLEANER

Chem-Dip Carburetor and Parts Cleaner were observed on a shelf within the building on the property. The Chem-Dip Carburetor and Parts Cleaner were stored in a container of approximately 1 gallon. The Material Safety Data Sheet (MSDS) for this product identified that it was comprised of primary amines, 2-butoxethanol and ethoxylated alkyl amines.

2.5 CHEMICAL USE AND DISPOSITION AT FORMER DUDLEY AND PETTY TRUCK STOP

The former Truck Stop is located on the northeast corner of South Avenue and Road 99W, west of the Site (Figure 2-1). Between 1947 and 1986, operations and facilities associated with the former Truck Stop included automobile and truck repair, gasoline and diesel pump islands, a restaurant, truck wash, restroom facilities, a radiator repair shop and tire shop. Features associated with chemical use and disposition at the former Truck Stop included underground gasoline, diesel and motor oil storage tanks, aboveground storage tanks, truck wash wastewater holding ponds, septic system and service bays (Haling, 2001).

In 1986, the former Truck Stop filed for bankruptcy. The Easy Clean Truck Wash continued to operate on the property until 1995. In 1996, the Regional Board issued a Cleanup and Abatement Order 96-701 to the bankruptcy trustee (Haling, 2001). A summary of the chemical use at the former Truck Stop is presented below.

2.5.1.1 GASOLINE

Gasoline was stored in underground storage tanks (USTs) and aboveground storage tanks (ASTs) for retail distribution at the former Truck Stop. Gasoline is a mixture of compounds including benzene (0.12 to 3.50 percent), toluene (2.73 to 21.80 percent), ethylbenzene (0.36 to 2.86 percent) xylenes (0.68 to 3.87 percent) and 1,2,4- and 1,3,5-trimethylbenzenes (0.79 to 4.45 percent) (SWRCB, 1989). Gasoline is comprised primarily of C4 to C12 with the most prevalent size C5 (Chevron, 1996).

2.5.1.2 DIESEL

Diesel was stored in USTs and ASTs at the former Truck Stop for retail distribution. Diesel fuel, which is less volatile than gasoline, is made up of heavier petroleum fractions (Fueltech, 2003). Chemicals in diesel fuel include naphthalene (0.13 percent), fluorine, anthracene and pyrene (SWRCB, 1989).

2.5.1.3 WASTE OIL

Truck washing at the former Truck Stop resulted in oil and petroleum products in wastewater. An oil/water separator was used to separate oil from the wastewater. Waste oil from truck washing operations was stored in an UST located at the truck wash facility (Haling, 2001). Recycled wastewater was sent to one of three wastewater evaporation ponds.

2.5.1.4 RADIATOR, BRAKE AND TIRE REPAIR

Historical operations at the former Truck Stop included radiator, brake and tire repair. Chemicals associated with radiator repair include ethylene glycol (anti-freeze) and rust inhibitors, which include petroleum hydrocarbons in the mineral oil range. Chemicals associated with tire and brake repair include brake cleaner, bead sealers, vulcanizing fluids and retread cements that contain VOCs. PCE is a component of brake cleaners (Mass., 2002). Bead sealers and vulcanizing fluids used for tire repair include TCE (90 to 97 percent) (Patch Rubber Company, 2001a,b). Retread cements contain heptane (62 to 86 percent) (Patch Rubber Company, 2001c).

2.5.1.5 CHEMICAL RELEASES

Releases to soil and groundwater at the former Truck Stop included discharges of wastewater, waste oil, and fuel into a water supply well located near the former liquid petroleum gas tanks. Diesel fuel was reported in a second water supply well resulting in the abandonment of both water supply wells (Harris, 2001). Easy Clean Truck Wash was reported to have regularly discharged wastes to the onsite ponds (Haling, 2001).

Wastewater from the steam cleaning of parts at the former radiator and tire shop reportedly stained the asphalt with oil and grease. There were reported leaks and uncontrolled discharges from the ASTs. Samples collected from the area near the tire store, card lock fuel islands and the ASTs revealed the presence of light non-aqueous phase liquid (LNAPL) (Haling, 2001).

3.0 SUMMARY OF INVESTIGATIONS

Sampling of private groundwater supply wells conducted by the Regional Board between 1994 and 2000 revealed the presence of TCE and DCE. Soil gas, soil and groundwater investigations conducted at the former Truck Stop between 1988 and 2002 by Haling and Associates revealed the presence of PCE, TCE, DCE and CE in soil gas and groundwater. WEST performed a review of historical chemical use, investigated potential preferential pathways and collected passive soil gas samples during September and October 2003. The 2003 investigations revealed the presence of PCE in soil gas at the Site. A summary of previous and recent investigations is presented below.

3.1 PREVIOUS INVESTIGATIONS

3.1.1 Private Water Supply Well Investigations

Seventeen private water supply wells in the vicinity of the Site were sampled by the Regional Board between 1994 and 2000. Groundwater samples were analyzed using USEPA Method 524.2. The highest concentrations of TCE and DCE were reported in samples from the Harris residence private water supply at 9.6 µg/l and 8.8 µg/l, respectively (Figure 3-1). The detection of TCE and DCE in domestic water supply well samples in 1994 prompted investigations into nature and extent of chlorinated solvents at the former Truck Stop. A summary of the private water supply sample results collected between 1994 and 2000 is presented in Table 3-1.

3.1.2 Former Dudley and Petty Truck Stop Investigations

Soil gas, soil and groundwater investigations were conducted at the former Truck Stop between 1988 and 2001 (Haling, 2001). Thirteen underground storage tanks (USTs) and 11 ASTs containing diesel, gasoline or motor oil were associated with former Truck Stop operations.

3.1.2.1 MOTOR OIL UST EXCAVATION – 1988

In 1988, a motor oil UST was excavated from a former pump island located on the eastern side of the former Truck Stop. Laboratory analysis of soil samples collected from the motor oil UST excavation revealed total petroleum hydrocarbons as diesel (TPHd) up to 6,800 milligrams per kilogram (mg/kg) and TPH as motor oil (TPHmo) up to 19,000 mg/kg in the samples collected from 14 feet below ground surface. The excavation was backfilled and covered with concrete (Haling, 2001).

3.1.2.2 OIL/WATER SEPARATOR EXCAVATION – 2001

In 2001, Hanover Environmental Services Inc. removed an oil/water separator and associated piping located at the former truck wash facility. Soil samples were collected from the bottom of the excavation by the Regional Board. Analysis of the soil samples collected from the excavation revealed total recoverable petroleum hydrocarbons (TRPH) up to 38 mg/kg. VOCs were not detected in the soil samples above the laboratory reporting limit of 0.005 mg/kg using USEPA Method 8260 (Haling, 2001).

3.1.2.3 TRUCK WASH POND SAMPLING – 2001

In July 2001, Hanover Environmental Services Inc. collected twenty-four sediment samples from the truck wash wastewater disposal ponds. Laboratory analysis of the sediment samples revealed TPH as oil and grease up to 2,690 mg/kg. The three samples from the truck wash wastewater disposal ponds analyzed for VOCs did not reveal their presence of the laboratory-reporting limit of 0.005 mg/kg (Haling, 2001).

3.1.2.4 SOIL GAS SAMPLING – 2001

Sixty-nine active soil gas samples were collected between the depths of 2 and 8 feet below ground surface at the former Truck Stop during June and July 2001. The active soil gas samples

were collected into Tedlar® bags and analyzed for VOCs by a California State-certified laboratory using USEPA Method TO-14.

The laboratory analyses of the active soil gas revealed the presence of PCE up to 4,191 µg/m^3 (618 parts per billion by volume; ppbv), TCE up to 5,107 µg/m^3 (949 ppbv), DCE up to 1,102 µg/m^3 (278 ppbv) and CE (vinyl chloride) up to 41 µg/m^3 (16 ppbv) in the vicinity of the former fuel islands (SB-2) (Figure 3-1).

PCE was reported up to 861 µg/m^3 (127 ppbv), TCE up to 2,664 µg/m^3 (495 ppbv), and DCE up to 587 µg/m^3 (148 ppbv) in soil gas samples collected in the vicinity of the ASTs (SGP-10). Laboratory analysis also revealed the presence of acetone, benzene, toluene, ethyl benzene, xylenes and trimethylbenzene in samples with reported concentrations of PCE, TCE and DCE. A summary of soil gas analytical results from samples collected during June and July of 2001 are presented in Table 3-2 and depicted on Figure 3-1.

3.1.2.5 SOIL SAMPLING - 2001

Forty-two soil samples were collected in July 2001 by Haling & Associates from 23 boring (SB-1 to SB-23) advanced at the former Truck Stop to depths between approximately 10 feet and 50 feet below ground surface. The soil samples were collected in from approximately 2 feet to 4 feet below the contact between the more permeable zone and the aquitard zone. The soil samples were analyzed for VOCs using USEPA Method 8260B (Haling, 2001).

Laboratory analysis of the soil samples revealed DCE up to 13 micrograms per kilogram (µg/kg) at boring SB-22, collected from a depth of 15 feet below ground surface. Laboratory analysis did not reveal other VOCs above laboratory reporting limits between 5 µg/kg and 10 µg/kg.

3.1.2.6 GRAB GROUNDWATER SAMPLING - 2001

Thirty-two grab groundwater samples were collected in July 2001 from 23 boring locations (SB-1 to SB-23). Laboratory analysis of the grab groundwater sample collected from the vicinity of the former ASTs revealed PCE at 2.7 µg/l (SB-22), TCE at 180 µg/l (SB-22), DCE at 720 µg/l (SB-1) and CE at 2.7 (SB-22). Laboratory analysis of the grab groundwater samples collected from the vicinity of the former fuel islands revealed PCE up to 10 µg/l (SB-2).

3.1.2.7 LNAPL PRODUCT SAMPLING

LNAPL was encountered in two borings advanced in the vicinity of the former ASTs (SB-8 and SB-10). Laboratory analysis of the LNAPLs for semi-volatile organic compounds revealed 2-methylnapthalene up to 23 µg/l (SB-8), dibenzofuran up to 14 µg/l (SB-10), fluorine up to 27 µg/l (SB-10) and phenanthrene up to 25 µg/l (SB-10). Laboratory analysis did not reveal VOCs above the laboratory reporting limits ranging from 5.0 µg/l to 10 µg/l in the LNAPL samples.

3.1.2.8 GROUNDWATER MONITORING – 2002

Haling and Associates installed twenty-six groundwater monitoring wells at and in the vicinity of the former Truck Stop between 1997 and 2001 (AGT MW-1, AGT MW-5 to AGT MW-11, CLI MW-1, CLI MW-4 to CLI MW-6, FC MW-1 to FC MW-3, FI MW-1 to FI MW-4, OSS MW-2 to OSS MW-7 and PB MW-2). Two of the groundwater monitoring wells, AGT MW-3 and AGT MW-4, were installed on the Site.

Laboratory analysis of groundwater samples collected from monitoring wells at the former Truck Stop during the Second Quarter 2002 revealed TPHg up to 5,200 µg/l (FI MW-2), TPHd up to 5,500,000 µg/l (AGT MW-1), TPHmo up to 84,000 µg/l (AGT MW-1), benzene up to 2.0 µg/l (AGT MW-5), ethyl benzene up to 270 µg/l (FI MW-2), total xylenes up to 30 µg/l (FI MW-2).

The groundwater monitoring also revealed the presence of CVOCs including, PCE up to 10 µg/l (OSS MW-7), TCE up to 82 µg/l (AGT MW-5), cis-1,2-DCE up to 710 µg/l (AGT MW-5),

trans-1,2-DCE up to 2.2 µg/l (AGT MW-5) and CE up to 2.2 µg/l (AGT MW-5). A summary of the groundwater analytical results from samples collected during 2002 is presented in Table 3-1.

Laboratory analysis of groundwater samples collected during the Second Quarter 2002 from monitoring wells located on the Site revealed TPHg up to 4,500 µg/l (AGT MW-4), TPHd up to 180 µg/l (AGT MW-4), benzene up to 0.69 µg/l (AGT MW-3), PCE up to 1.0 µg/l (AGT MW-3), TCE up to 53 µg/l (AGT MW-3) and DCE up to 290 µg/l (AGT MW-3). Laboratory analysis did not reveal other VOCs above laboratory reporting limits.

3.2 RECENT INVESTIGATIONS

WEST conducted investigations at the Site during September and October of 2003. The investigations were conducted pursuant to the approved Work Plan. The work performed included: 1) a review of available historical documents and regulatory records, 2) a review of available information regarding hazardous materials storage, handling and disposal practices, 3) a utility survey and 4) a soil gas investigation.

The passive soil gas investigation was designed as a screening tool to identify and quantify a broad range of VOCs in the subsurface. The passive soil gas sample results were designed to provide: 1) an initial screening of Site conditions, 2) data on types of VOCs in the subsurface, 3) information on the lateral distribution of VOCs and 4) preliminary information for tracking groundwater VOC plumes (USEPA, 1997). A summary of the recent investigations and findings is presented below.

3.2.1 Utility Survey and Preferential Pathway Investigation

Pursuant to California Assembly Bill AB 73, Underground Services Alert (USA) was notified and the work areas within public right-of-ways were located. A private underground utility locating subcontractor, Subsurface Locating Services, conducted a utility survey. The results of the utility survey were used to evaluate potential preferential pathways for chemical migration.

Preferential pathways may act as conduits to distribute VOCs through discharges and leaks from sanitary sewers or septic systems and migration along permeable backfill materials.

The results of the utility survey revealed water, natural gas, and subsurface electrical lines present on the 1745 Toomes Avenue portion of the Site (Figure 2-1). A concrete basin and sanitary sewer line were also located on the 1745 Toomes Avenue property. The sanitary sewer line exits the building to the east and connects to a sewer line located within Toomes Avenue.

Water, electrical and telephone lines were located on the 2060 South Avenue portion of the Site. McCoy's Ace Hardware is not connected to the City of Corning sewer service and is on a septic system (McCoy, C., Personal Communication, October 27, 2003b). The locations of the utilities are depicted on Figure 2-1.

3.2.2 Passive Soil Gas Sampling

WEST conducted a passive soil gas investigation at the Site during September and October of 2003. The passive soil gas investigation included installation of 21 (P-1 to P-21) passive soil gas samplers at the Site on September 11 and 12, 2003 (Figure 2-1). Photographs of the Site passive soil gas sample locations are included in Appendix C.

The samplers were installed at locations associated with historic solvent use and disposition. The sample locations were developed in conjunction with staff of the Regional Board during meetings at the Site on June 23, 2003. The passive soil gas samplers were retrieved on October 2, 2003 and analyzed for VOCs by USEPA Method 8260B. A summary of the installation methodology and analytical results are presented below.

3.2.2.1 PASSIVE SOIL GAS SAMPLER INSTALLATION METHODOLOGY

The passive soil gas samplers were constructed of an approximately 3-inch long and ½-inch diameter glass vial equipped with a perforated screw cap. Two hydrophobic sorbent filaments

were contained in the glass vials to adsorb VOCs present in the vapor phase. A wire was attached to the glass vials to lower and retrieve the samplers.

An electric rotating hammer drill outfitted with a 1.5-inch diameter drill bit was used to advance borings approximately 1-foot below ground surface. A laboratory supplied 8-inch long by ¾-inch diameter copper protective sleeve was inserted into the borehole. The passive soil gas samplers were installed within the annulus of the copper protective sleeve using the retrieval wire. An aluminum foil pug was placed in the top of the protective sleeve with the retrieval wire extending to the surface. The top of the protective sleeve was plugged at the ground surface with a bentonite seal.

Eleven passive soil gas samplers (P-2, P-3, P-4, P-5, P-7, P-8, P-9, P-18, P-19, P-20 and P-21 were installed in unpaved gravel areas at the Site. Nine passive soil gas samplers (P-1, P-6, P-10, P-11, P-12, P-13, P-14, P-15, P-16 and P-17) were installed beneath concrete paved areas at the Site (Figure 3-2).

3.2.2.2 PASSIVE SOIL GAS SAMPLER RETRIEVAL METHODOLOGY

The soil gas samplers were retrieved on October 2, 2003. The passive soil gas samplers were retrieved by removing the bentonite seal and lifting the passive soil gas sampler from the copper protective sleeve using the retrieval wire. The perforated screw cap was then replaced with a solid screw cap, labeled and placed in a chilled cooler for transportation to the analytical laboratory. The passive soil gas samplers were submitted to Beacon Environmental Laboratories of Bel Air, Maryland under chain-of-custody protocol for chemical analysis of VOCs using USEPA Method 8260B.

3.2.2.3 ANALYTICAL RESULTS

Laboratory analysis of the soil gas samplers revealed the highest concentrations of CVOC along the western property boundary of the Site in the vicinity of the former ASTs at the former Truck Stop. PCE was reported at 835 nanograms (ng) in the sampler installed at location P-2.

Petroleum related hydrocarbons VOCs were detected in samplers located along an area downgradient of the former ASTs. Petroleum hydrocarbon related VOCs were reported up to 178 ng per sampler (P16), toluene up to 207 ng (P12), 1,2,4-trimethylbenzene at 42 ng per sampler. Petroleum related VOCs were also detected at downgradient location P-16 with 57 ng per sampler and 117 ng per sampler of 1,2,4-trimethylbenzene and 67 ng per sampler and 137 ng per sampler of 1,3,5-trimethylbenzene. A summary of the passive soil gas analytical results is included in Table 3-3.

3.2.2.4 QUALITY CONTROL SAMPLES

Approximately 20 percent of the samples were analyzed in duplicate (P-4, P-8, P-16, P-18 and P-21). Relative standard deviation of the duplicate samples ranged from 0 to 17 percent. VOCs were not detected above method reporting limits for the travel blank and the method blank. Copies of the laboratory data certificates and chain of custody form are included in Appendix B.

4.0 DATA EVALUATION

Investigations have revealed the presence of both non-chlorinated petroleum hydrocarbon related VOCs and CVOCs (PCE, TCE, DCE and CE) in soil gas and groundwater at and in the vicinity of the Site. Sampling has also revealed the presence of the CVOCs, TCE and DCE, in private water supply wells downgradient of the Site. Recent investigations were conducted to characterize whether historical use of chemicals at the Site contributed to the presence of the TCE and DCE in the downgradient private water supply wells.

The evaluation of the potential source(s) of the TCE and DCE in the private water supply wells requires an accurate conceptual model. An accurate Conceptual Site Model (CSM) incorporates all of the sampling data and describes the fate and distribution of chemicals. Through a comparison with data, the CSM is used to assess the adequacy of the Site characterization and identify whether more information is required to make decisions regarding the source of the chemicals, i.e., data gaps.

4.1 CONCEPTUAL SITE MODEL

The decision-making framework for investigations and response actions centers on the development and continual modification of the CSM. The CSM is updated through the progressive assemblage of information from the environmental investigations. Pursuant to CalEPA guidelines, a graphical CSM was prepared to describe the source, distribution and fate of VOCs at the Site and surrounding properties (CalEPA, 2003).

The CSM was developed based on the results of a thorough review of; 1) historic operations, 2) waste management practices, 3) groundwater flow direction, and 4) the nature and distribution of chemicals in soil gas, soil and groundwater (Figure 4-1). The investigation data indicate that there have been releases of non-chlorinated petroleum hydrocarbon related VOCs and CVOCs at the former Truck Stop. The data also indicate that CVOCs have not been released at the Site and

that operations at the Site have not contributed to the presence of TCE and DCE in the private water supply wells.

The CSM explains the presence of TCE and DCE in the private water supply wells downgradient of the Site and the detection of PCE in soil gas at the Site as having originated at the former Truck Stop. The background information, fate and transport mechanisms as well as laboratory analytical supporting the CSM include:

- The documented historical chemical use at the Site did not include CVOCs.
- Tire service operations at the former Truck Stop would have included the use of PCE.
- Site investigation data that revealed:
    - PCE is the only CVOC detected in soil gas at the Site.
    - The highest concentration of PCE in soil gas was measured in the sampler located closest to the former Truck Stop.
    - PCE concentrations in soil gas decreased on the Site farther from the former Truck Stop.
    - TCE and DCE are the primary CVOCs found in groundwater at the Site, with the highest detection of PCE in groundwater at 1 µg/l.
    - Benzene was the only non-chlorinated petroleum related VOC detected in soil gas that was also detected in groundwater. The highest concentration of benzene was reported at 0.69 µg/l.
- Investigations at the former Truck Stop have revealed that:

- PCE in soil gas was highest near the former tire store and decreased in concentration closer to the Site.

- PCE was detected in soil gas samples from every location where CVOCs were detected.

- PCE degradation products, TCE, DCE and CE are present in localized areas near three petroleum hydrocarbon release sources.

- There have been releases of petroleum hydrocarbons in the vicinity of the former tire store, card lock fuel islands and the ASTs.

- The release of petroleum hydrocarbons at the former Truck Stop resulted in conditions conducive to the formation of the PCE degradation products, i.e., TCE, DCE and CE.

- PCE was detected in groundwater in the vicinity of the tire shop at the former Truck Stop and the relative concentration of the degradation products increases in the downgradient direction.

Details of the information supporting the CSM are presented below.

4.2 HISTORICAL CHEMICAL USE AND DISPOSITION

A thorough review was conducted of the documents and activities related to historical use of materials containing VOCs at and in the vicinity of the Site. The documents reviewed included historical aerial photographs, state and county agency files, hazardous materials and waste documents, literature, online information, standard environmental databases and reports of investigations. In addition, WEST personnel performed a site reconnaissance and conducted interviews with Site personnel to investigate historical chemical use.

The review revealed that non-chlorinated solvents have been associated with historical operations at the Site. Despite the reported anecdotal incidents of solvent spills at the Site, the review of chemical use documentation did not indicate that CVOCs were used. However, CVOCs appear to have been used at the former Truck Stop. CVOCs including PCE and TCE are associated with truck maintenance activities including degreasing, brake and tire repair. Non-chlorinated petroleum related VOCs including benzene, toluene, ethyl benzene, xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene, components of petroleum hydrocarbon fuels, were used and documented to have been released at the former Truck Stop.

Based on the review of the documented historical chemical use, it does not appear that operations at the Site could have contributed to CVOCs in groundwater.

4.3 SITE INVESTIGATION DATA

Investigations conducted in October 2003 at the Site revealed PCE as the only CVOC present in soil gas. The maximum concentration of PCE detected in soil gas samplers (835 nanograms per sampler) was in the sample collected from closest to the former Truck Stop (P-2). There were only four other detections of PCE in soil gas with the highest concentration reported at 63 nanograms per sampler.

The distribution of VOCs in soil gas is controlled primarily by diffusion and dispersion with contributing influences from degradation as discussed below. Diffusion of VOCs is similar to heat transfer, i.e., movement from hot to cold. VOC transfer by diffusion moves from areas of higher concentration to areas of lower concentration. The flow is down the concentration gradient, unless limited by convective (pumping forces) or density gradients (gravity). Therefore, based on the location of the highest concentration in soil gas, the data is interpreted to indicate that the PCE at the Site is originating from the former Truck Stop (Figure 4-2).

As TCE and DCE were not detected in soil gas samples at the Site, it does not appear that there is an onsite source of TCE and DCE. Therefore, the absence of TCE and DCE in soil gas

supports the conclusion that operations at the Site have not contributed to the presence of TCE and DCE in the private water supply wells.

Non-chlorinated petroleum hydrocarbon related VOCs were detected in soil gas at the Site, including benzene, ethyl benzene toluene, xylenes, 1,2,4- and 1,3,5-trimethylbenzene. Only benzene was detected in groundwater beneath the Site. Therefore, while historical chemical use at the Site included non-chlorinated petroleum related VOCs, the absence of their detection in groundwater indicates that operations at the Site have not contributed to groundwater contamination.

The distribution of CVOCs in groundwater also indicates that the TCE and DCE in the private water supply wells originate at the former Truck Stop. The maximum concentration of CVOCs (795.4 µg/l) was detected at sample location AGT MW-5, adjacent to the ASTs located on the former Truck Stop. Decreasing concentrations of CVOCs were detected in groundwater samples collected at the Site from AGT MW-3 (344 µg/l) and AGT MW-4 (3.7 µg/l) and the private water supply well on the Stout property (10.91 µg/l) downgradient from the former Truck Stop.

PCE was reported at 1 µg/l in the monitoring well AGT MW-3 located closest to the former Truck Stop. PCE was not detected in groundwater above the laboratory-reporting limit in samples collected from monitoring well AGT MW-4, located farther from the former Truck Stop. The fate and transport mechanisms that explain the distribution of the PCE degradation products are discussed below.

4.4 FORMER TRUCK STOP INVESTIGATION DATA

PCE was detected in each soil gas sample where CVOCs were detected, with the exception SB-1. The highest concentration of PCE in soil gas was detected near the former tire shop at 4,190 $\mu g/m^3$ (618 ppbv) at SB-2. PCE concentrations in soil gas trended lower toward the Site with PCE reported at 861 $\mu g/m^3$ (127 ppbv) at SGP-10 (SB-10) and 434 $\mu g/m^3$ (64 ppbv) at SB-22 located closest to the ASTs and the Site. The distribution of PCE in soil gas is consistent with a

release at the former Truck Stop that has migrated through diffusion and dispersion to be found in soil gas at the Site.

While PCE degradation products, TCE, DCE and CE are found in groundwater trending from east to west, their occurrence is more limited in soil gas samples. The presence of the degradation products, TCE, DCE and CE in soil gas samples was limited to three primary areas, the vicinity of the former tire store, card lock fuel islands and the ASTs (Figure 4-2). These three areas were also characterized with soil saturated with petroleum hydrocarbons (LNAPL).

Laboratory analysis of soil gas samples collected on the former Truck Stop property revealed the highest total non-chlorinated VOCs (sum of benzene, toluene, ethyl benzene, xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene) near the former tire shop, (550.8 ppbv), card lock fuel islands (1,313 ppbv) and the ASTs (836.9 ppbv).

The composition of the groundwater revealed increasing trends of degradation products in the groundwater downgradient direction. The ratio of the sum of the TCE, DCE and CE to PCE in groundwater increased from approximately 5 to 1 in samples from the vicinity of former tire shop at the former Truck Stop (OSS-MW-7) to approximately 665 to 1 in the vicinity of the ASTs (AGT-MW-5). This trend is coincident with the concentration of TPH in the groundwater and explains the absence of PCE in the private water supply wells and the presence of PCE in soil gas at the Site.

Groundwater samples collected from the western portion of the former Truck Stop in the vicinity of the former tire store revealed total petroleum hydrocarbons (sum of TPHg, TPHd, and TPHmo) ranging from below the laboratory-reporting limit to 53 µg/l (OSS-MW-5). Samples of groundwater collected from the vicinity of the ASTs were reported to contain up to 5,584,610 µg/l of total petroleum hydrocarbons (AGT-MW-1) and samples collected from the vicinity of the card lock fuel islands were reported to contain total petroleum hydrocarbons up to 15,440 µg/l (FI MW-1).

The distribution of PCE and its degradation products appears related to biologically mediated reductive dehalogenation (biodegradation) due to the co-presence with petroleum hydrocarbons. A discussion of the biodegradation process and its application to the CSM is presented below.

4.4.1 Biodegradation

The relative concentrations of CVOCs in soil gas and groundwater have been affected by biological transformation or biodegradation. Biodegradation refers to the biochemical reactions that are performed by microorganisms (e.g., bacteria). Naturally occurring microbes metabolically transform toxic organic compounds into harmless by-products, i.e., the mass of CVOCs is reduced. In this process, the microorganisms also require other nutrients to efficiently perform the transformation. Microbial investigations of the subsurface have revealed that all aquifers examined thus far support a microbial population. Typical microbial populations range from 100,000 to 10,000,000 cells per gram, dry weight. Often the release of organic chemicals results in an increase in the microbial population as the bacteria feed and grow using the new carbon source.

The CVOCs, including PCE, can be transformed by chemical and biological processes to form a variety of other compounds, including TCE, DCE and CE. However, PCE chemical transformation processes occur under limited groundwater conditions, i.e., anaerobic and sulfate reducing. Generally, organic molecules with abundant carbon-hydrogen bonds (i.e. petroleum hydrocarbons) are good electron donors (food sources) because they contain available electrons.

CVOCs such as PCE, however, are electron poor because they have chlorine-carbon bonds preferred by the bacteria as electron acceptors. During reductive dehalogenation, chlorine atoms are replaced by electrons coupled to hydrogen atoms, resulting in sequential dechlorination from PCE to TCE to DCE to CE. Therefore, one of the requirements for biotransformation of CVOCs is the presence of sufficient concentrations of other organics (co-contaminants) that can serve as electron donors for energy metabolism.

PCE biodegrades very slowly in water under most conditions. Studies have found limited or no biodegradation under aerobic conditions. Biodegradation under anaerobic conditions has been noted and ranged from very little after 12 weeks to 40 percent after 8 weeks. Therefore, the anaerobic conditions promoted by the presence of petroleum hydrocarbons forms an ideal condition for biological reductive dehalogenation. Under aerobic (oxygen available) environments, a petroleum hydrocarbon compound is oxidized to form carbon dioxide and water.

$$C_xH_y + (x+(y/4))O_2 \rightarrow xCO_2 + (y/2)H_2O$$

Under anaerobic conditions, the pathway for reductive dehalogenation by sulfate bacteria is presented below.

$$CHCl_2{=}CHCl_2 \rightarrow CHCl{=}CCl_2 \rightarrow CHCl{=}CHCl + Cl^- \rightarrow CH{=}CHCl + 2Cl^- + O_2 \rightarrow 2CO_2 + H_2O + 3Cl^-$$

or

PCE → TCE → DCE → CE (Vinyl Chloride)→ Carbon Dioxide, Water and Chloride ions

The lack of TCE, DCE and CE in soil gas at the Site indicates aerobic conditions in the vadose zone, i.e., where biological reductive dehalogenation of PCE is not occurring. Therefore, the absence of degradation products in soil gas at the Site is supportive of the conclusion that PCE in soil gas and TCE and DCE in groundwater at the Site originate at the former Truck Stop where reducing conditions are present. The PCE present in soil gas at the Site has migrated through the aerobic vadose zone, i.e., not undergone biodegradation.

Similarly, the PCE in groundwater has been transformed to TCE and PCE during its migration from the former Truck Stop to the private water supply wells in the reducing conditions of the groundwater. The relative ratio of PCE degradation products in groundwater indicates that source of TCE and DCE in groundwater beneath the Site originates upgradient. PCE was reduced in groundwater from 10 µg/l in the vicinity of the former tire store to below the laboratory-reporting limit beneath the Site (AGT MW-4). The biodegradation of PCE in

groundwater only resulted in TCE and DCE remaining and these degradation products being transported to the private water supply wells.

4.5 SUMMARY OF FINDINGS

The findings supporting the Conceptual Site Model are summarized below and on Figure 4-1.

- Historical use of the Site has been limited to metal cutting, grinding and painting between the 1970s and 1980s, retail hardware store and agricultural bin manufacturing in the 1980s to present and equipment refurbishing from 1990 to present.

- There is no documented use of CVOCs at the Site.

- PCE was the only CVOC detected in soil gas at the Site.

- The nature and distribution of CVOCs in soil gas at the Site indicates that there have not been onsite releases that have contributed to TCE and DCE in groundwater.

- The highest concentration of PCE detected in soil gas at the Site was found in the sample closest to the former Truck Stop.

- Groundwater flow direction is from the former Truck Stop located west of the Site, to the private groundwater supply wells located east of the Site.

- Operations on the neighboring and upgradient former Truck Stop property included tire, brake and radiator repair, fuel storage and dispensing involving the use and releases of:

    - Spent solvents containing PCE to soil gas, soil and groundwater.

    - Non-chlorinated petroleum related VOCs to soil gas, soil and groundwater

- The PCE released at the former Truck Stop in the aerobic vadose zone has migrated to soil gas at the Site.

- The distribution of CVOCs in groundwater indicates that the TCE and DCE present in groundwater beneath the Site and downgradient private water supply wells originate on the upgradient neighboring former Truck Stop property.

- The co-presence of TPH and CVOCs has promoted the degradation of PCE to TCE and DCE in the reducing conditions in groundwater that has migrated to the private water supply wells.

Based on these findings, the following conclusions have been reached:

- CVOCs found in soil gas and groundwater at the Site can only reasonably be explained as having been derived from releases at the former Truck Stop.

- The TCE and DCE found in the private water supply wells can only reasonably be explained as having been derived from groundwater containing CVOCs migrating from the former Truck Stop.

- The CSM adequately explains all the Site data and therefore, no additional investigations at the Site are warranted.

5.0 REFERENCES

3PLOT (1998) *3Plot Program for Windows*, version 4.40, Moscow.

California Environmental Protection Agency, *Guidelines for Hydrogeologic Characterization of Hazardous Substance Release Sites. Volume 2: Project Management Schedule* (CALEPA, 1995).

California Regional Water Quality Control Board – Central Valley Region, *Internal memo to Karen Clementsen from Eric Rapport, 25 November 2002 (*Regional Board 2002a).

California Regional Water Quality Control Board – Central Valley Region, *Letter to Philip Woodward, May 2002* (Regional Board 2002b).

California Regional Water Quality Control Board – Central Valley Region, *Record of Communication between Eric Rapport and Bobby Lucero, November 12, 2002* (Regional Board 2002c).

California Regional Water Quality Control Board – Central Valley Region, *Record of Communication between Eric Rapport and Lee Mercer, November 21, 2002* (Regional Board 2002d).

California Regional Water Quality Control Board – Central Valley Region, *Letter to N.M. Duncan Q-Tip Trust, Chip McCoy and Robert O'Connor, 8 January, 2003* (Regional Board 2003a).

California Regional Water Quality Control Board – Central Valley Region, Site Inspection, *Omega Waste Management (OWM) Toomes Avenue Facility, Corning, Tehama County, February 14, 2003* (Regional Board 2003b).

Chevron, http://www.chevron.com/prodserv/fuels/bulletin/motorgas/Motor_Gas.pdf, 1996.

Fueltech, 2003. http://www.fueltechinc.com/dsl%20msds.htm.

Golden Software Inc., *Surfer Version 6.04*. Golden Software Inc, 809 14th Street, Golden, Colorado 80401-1866 (Golden Software, 1996).

Haling and Associates, *Focused Environmental site Investigation and Quarterly Monitoring Report, Former Dudley Truck stop, Corning, California, October 2001* (Haling, 2001).

Haling and Associates, *Quarterly Monitoring Report, Second Quarter 2002, former Dudley Truck Stop, Corning, California, 2002* (Haling, 2002).

Hunt, M., *Personal Communication*, *October 2, 2003.*

Isaaks, E.H. and Srivastava, R.M. (1989). *An Introduction to Applied Geostatistics*, Oxford University Press, New York, Chapters 11 and 12.

Lawrence and Associates, *Work Plan for Preliminary Site Assessment of Petro Stopping Centre No.9, September 1999* (Lawrence 1999).

McCoy, C., *Personal Communication*, *October 27, 2003.*

National Park Service, Environmental Contaminants Encyclopedia, *Mineral Spirits Entry*, July 1, 1997 (NPS, 1997).

Non-Waste Hazardous Material Inventory Statements for Omega Waste Management Inc. (NWHMIS, 2003).

Oliver, M.A. and Webster, R. (1991) "*How Geostatistics Can Help You," Soil Use and Management*, 7, No. 4, 206-217.

Patch Rubber Company, Material Safety Data Sheet, Bead Sealer, January 1, 2001 (Patch Rubber Company, 2001a).

Patch Rubber Company, Material Safety Data Sheet, Chemical Vulcanizing Fluid, January 1, 2001 (Patch Rubber Company, 2001b).

Patch Rubber Company, Material Safety Data Sheet, Retread Cements, January 1, 2001 (Patch Rubber Company, 2001c).

State Water Resources Control Board, *Final Draft, Guidelines for Investigation and Cleanup of MTBE and Other Ether-Based Oxygenates*, March 27, 2000 (SWRCB, 2000).

State Water Resources Control Board (1989), *LUFT Field Manual Revision* (SWRCB, 1989).

United States Environmental Protection Agency, *Expedited Site Assessment Tools for Underground Storage Tank Sites: A Guide for Regulators. Chapter IV, Soil Gas Surveys, March 1997* (USEPA, 1997).

United States Environmental Protection Agency, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Office of Emergency and Remedial Response, Office of Solid Waste and Emergency Response,* March 1988 (USEPA, 1988).

United States Environmental Protection Agency, *Environmental Technology Verification Program Verification Statement, EMFLUX Soil Gas Investigation System,* August 1998 (USEPA, 1998).

USEPA, *Guidance for the Data quality Objective Process, Office of Environmental Information, EPA/600/R-96/055,* August 2000 (USEPA, 2000).

WEST, *Amended Soil Gas Investigation Work Plan*, April, 2003 (WEST, 2003).

6.0 DISTRIBUTION LIST

Jan A. Greben, Esq.
Greben & Associates
1231 State Street, Suite 200
Santa Barbara, California 93101

Ms. Neoma Mae Duncan, Trustee
N.M. Duncan Q-Tip Trust
P.O. Box 766
Corning, California 96021

Mr. Robert O'Connor
Omega Waste Management
19520 Glenn Road
Corning, California 96021

Mr. Eric Rapport, C.H.G., C.E.G.
Associate Engineering Geologist
California Regional Water Quality Control Board
– Central Valley Region
415 Knollcrest Drive, Suite 100
Redding, California 96002

Mr. Lee Mercer
Tehama County
Department of Environmental Health
633 Washington Street, Room 36
Red Bluff, CA 96080

TABLE 3-1
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - VOCS
2060 South Avenue and 1745 Toomes Avenue
Corning, California

Well ID	Date	Zone	Petroleum Hydrocarbons							Volatile Organic Compounds				
			TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	PCE	TCE	DCE	CE	Total CVOCs[1]
			(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
Private Water Supply Wells														
Glassblowers	10/3/94	--	--	--	--	--	--	--	--	--	<1.0	--	--	--
Corbett	7/27/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
Fultz	11/29/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
	6/3/03	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50
Perrin	6/1/99	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
Sutterfield	7/27/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
	6/3/03	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	--
Owens	7/27/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
	6/3/03	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	--
Harris	7/27/00	--	--	--	--	--	--	--	--	--	9.6	8.8	--	18.4
	6/3/03	--	--	--	--	--	--	--	--	<0.50	1.74	0.85	<0.50	2.59
Stout	7/27/00	--	--	--	--	--	--	--	--	--	5.9	4.5	--	10.4
	6/3/03	--	--	--	--	--	--	--	--	<0.50/<0.50	4.86/5.83	5.08/5.01	<0.50/<0.50	10.91
Oldfield	5/18/94	--	--	--	--	--	--	--	--	--	8.7	--	--	8.7
	6/5/03	--	--	--	--	--	--	--	--	<0.50/<0.50	3.29/3.66	3.23/3.79	<0.50/<0.50	7.45
Cunningham	7/27/00	--	--	--	--	--	--	--	--	--	1.8	<0.5	--	1.8
	6/3/03	--	--	--	--	--	--	--	--	<0.50	0.98	<0.50	<0.50	0.98
Hicks	11/29/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
McDonald	11/29/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
Lucero	7/27/00	--	--	--	--	--	--	--	--	--	1.9	<0.5	--	1.9
Miranda	11/29/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
Vincent	11/29/00	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	--
Curry	11/29/00	--	--	--	--	--	--	--	--	--	1.1	1.2	--	2.3
Lopez	11/29/00	--	--	--	--	--	--	--	--	--	0.5	<0.5	--	--

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			TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	PCE	TCE	DCE	CE	Total CVOCs[1]
			(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
Monitoring Wells														
AGT MW-1	4/18/02	I	610	5,500,000	84,000	<0.30	<0.30	<0.50	<0.50	<0.5.0	<0.50	<0.50	<0.50	--
AGT MW-3	4/17/02	I	260	<50	<100	0.69	<0.30	<0.50	<0.50	1	53	290	<0.50	344
AGT MW-4	4/17/02	I	4,500	180	<100	<1.1	<1.1	<1.1	<22	<0.50	2.6	1.1	<0.50	3.7
AGT MW-5	4/18/02	I	54	290	120	2	<0.30	<0.50	<0.50	1.2	82	712.2	2.2	797.6
AGT MW-6	4/18/02	I	<50	170	<110	<0.30	<0.30	<0.50	<0.50	<0.50	4.9	2.9	<0.50	7.8
AGT MW-7	4/18/02	I	<50	58	<100	<0.30	<0.30	<0.50	<0.50	<0.50	5.5	5.4	<0.50	10.9
AGT MW-8	4/17/02	S	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	3.3	2	<0.50	5.3
AGT MW-9	4/17/02	S	150	180	<110	2	<0.30	<0.50	<0.50	<0.50	0.7	250	<0.50	250.7
AGT MW-10	4/17/02	S	<50	5,000	510	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
AGT MW-11	4/18/02	I	<50	120	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
CLI MW-1	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
CLI-MW-5	4/18/02	D	<50	69	410	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
CLI-MW-6	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
FC MW-1	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
FC MW-2	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
FC MW-3	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
FI MW-1	4/18/02	I	100	15,000	330	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
FI MW-2	4/19/02	I	5,200	2,900	<100	<0.30	<0.30	270	30	<0.50	<0.50	<0.50	<0.50	--
FI MW-3	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
FI-MW-4	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
OSS MW-4	4/19/02	I	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
OSS MW-5	4/18/02	D	<50	53	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
OSS MW-6	4/18/02	D	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	0.9	4.6	<0.50	--
OSS MW-7	4/17/02	S	--	--	--	--	--	--	--	10	16	22.82	<0.50	48.82
PB MW-2	4/17/02	--	<50	<50	<100	<0.30	<0.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--

Notes:

-- not analyzed

<0.50 less than reporting

1- Total of PCE, TCE, DCE and CE for monitoring wells; total of TCE and DCE for private wells

TABLE 3-2
SUMMARY OF SOIL GAS ANALYTICAL RESULTS - FORMER DUDLEY AND PETTY TRUCK STOP
2060 South Avenue and 1745 Toomes Road
Corning, California

Sample ID	Date	Depth (ft)	Petroleum Related VOCs						Volatile Organic Compounds							
			Benzene	Toluene	Ethyl-benzene	Xylenes	1,3,5-Tri-methyl-benzene	1,2,4-Tri-methyl-benzene	PCE	TCE	DCE	CE	1,1-DCE	Trichloro-fluoro-methane	Acetone	Styrene
			(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)
SGP-1	6/20/01	8	9	72	5.1	24.3	3.3	7.1	20	<1.0	<1.0	<1.0	<1.0	3.3	123	1.4
SGP-2	6/20/01	4	8.3	284	35	205	5.5	13	25	<2.0	<2.0	<2.0	<2.0	<2.0	79	<2.0
SGP-3	6/20/01	8	6.1	50	4.1	19.8	2.3	5.3	14	<1.0	<1.0	<1.0	<1.0	12	127	<1.0
SGP-4	6/20/01	4	29	421	30	155	8.5	21	27	<3.0	<3.0	<3.0	<3.0	4.8	339	<3.0
SGP-5	6/20/01	8	22	621	74	430	15	34	34	<3.0	<3.0	<3.0	<3.0	<3.0	127	<3.0
SGP-6	6/20/01	8	28	256	16	22.4	5.2	9.9	20	<2.0	<2.0	<2.0	<2.0	2.9	181	3.4
SGP-7	6/20/01	8	25	260	21	20.6	4.0	7.9	29	<1.0	1.6	<1.0	<1.0	14	145	1.6
SGP-8	6/20/01	4	28	473	50	53	<8.0	18	38	<4.0	<4.0	<4.0	<4.0	<4.0	220	<4.0
SGP-9	6/20/01	8	53	1,000	103	117	14	26	73	<5.0	<5.0	<5.0	<5.0	<5.0	261	<5.0
SGP-10	6/20/01	4	34	673	49	52	8.9	20	127	495	148	<4.0	41	<4.0	150	<4.0
SGP-11	6/20/01	6	12	439	62	396	13	32	27	<3.0	<3.0	<3.0	<3.0	3.7	52	<3.0
SGP-12	6/20/01	6	22/36	426/447	66/61	434/94	20/14	55/25	24/27	<3.0/4.0	<3.0/<3.0	<3.0/<3.0	<3.0/<3.0	<3.0/<3.0	219/189	<3.0/10
SGP-13	6/20/01	4	29	480	34	161	<8.0	<8.0	28	<4.0	<4.0	<4.0	<4.0	<4.0	159	<4.0
SGP-14	6/20/01	4	11	289	39	245	7.3	19	20	<2.0	<2.0	<2.0	<2.0	<2.0	95	<2.0
SGP-15	6/20/01	4	26	273	42	252	8.8	23	21	<2.0	<2.0	<2.0	<2.0	<2.0	204	<2.0
SGP-16	6/20/01	4	7.7	197	34	177	13	37	17	<1.5	35	<1.5	<1.5	<1.5	41	<1.5
SGP-17	6/20/01	4	6.3	154	32	225	14	42	15	<1.0	<1.0	<1.0	<1.0	2.7	73	<1.0
SGP-18	6/20/01	4	7.6	313	40	257	13	34	19	4.7	<2.0	<2.0	<2.0	2.4	40	<2.0
SGP-19	6/20/01	8	59/45	1,090/1,050	132/121	754/164	27/28	69/66	59/54	<8.0/<7.0	<8.0/<7.0	<8.0/<7.0	<8.0/<7.0	<8.0/7.0	209/127	<8.0/<7.0
SGP-20	6/20/01	4	9.1	153	32	230	18	58	9.6	<1.0	<1.0	<1.0	<1.0	2.5	82	<1.0

TABLE 3-2
SUMMARY OF SOIL GAS ANALYTICAL RESULTS - FORMER DUDLEY AND PETTY TRUCK STOP
2060 South Avenue and 1745 Toomes Road
Corning, California

Sample ID	Date	Depth (ft)	Petroleum Related VOCs						Volatile Organic Compounds							
			Benzene	Toluene	Ethyl-benzene	Xylenes	1,3,5-Tri-methyl-benzene	1,2,4-Tri-methyl-benzene	PCE	TCE	DCE	CE	1,1-DCE	Trichloro-fluoro-methane	Acetone	Styrene
			(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)
SB-1	7/10/01	2.5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	6	<1.0	<1.0	--	--	--
SB-2	7/11/01	3	--	--	--	--	--	--	260	558	115	7.5	18	--	--	--
		5	--	--	--	--	--	--	618	949	278	16	39	--	--	--
SB-2A	7/27/01	4	--	--	--	--	--	--	92	238	50	3.3	8.5	--	--	--
SB-3	7/18/01	2.5	--	--	--	--	--	--	1.4	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	2.7/2.7	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	--	--	--
SB-4	7/13/01	2.5	--	--	--	--	--	--	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-5	7/25/01	2.5							<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0			
		5	--	--	--	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	--
SB-6	7/12/01	2.5	--	--	--	--	--	--	6.2	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	7.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-7	7/11/01	3	--	--	--	--	--	--	4.4	2.5	<1.0	<1.0	<1.0	--	--	--
		6	--	--	--	--	--	--	2.5	1.6	<1.0	<1.0	<1.0	--	--	--
SB-8	7/24/01	2.5	--	--	--	--	--	--	3.6	4.2	<3.0	<3.0	<3.0	--	--	--
		5	--	--	--	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	--
SB-9	7/19/01	2.5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--

TABLE 3-2
SUMMARY OF SOIL GAS ANALYTICAL RESULTS - FORMER DUDLEY AND PETTY TRUCK STOP
2060 South Avenue and 1745 Toomes Road
Corning, California

Sample ID	Date	Depth (ft)	Petroleum Related VOCs						Volatile Organic Compounds							
			Benzene	Toluene	Ethyl-benzene	Xylenes	1,3,5-Tri-methyl-benzene	1,2,4-Tri-methyl-benzene	PCE	TCE	DCE	CE	1,1-DCE	Trichloro-fluoro-methane	Acetone	Styrene
			(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)
SB-10	7/10/01	2.5	--	--	--	--	--	--	2.3	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	1.2	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-11	7/17/01	2.5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-12	7/9/01	5	--	--	--	--	--	--	1.9	<1.0	<1.0	<1.0	<1.0	--	--	--
		10	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-13	7/16/01	2.5	--	--	--	--	--	--	14	131	89	11	12	--	--	--
		5	--	--	--	--	--	--	20/25	180/219	140/174	18/<1.0	20/24	--	--	--
SB-14	7/11/01	3	--	--	--	--	--	--	12	8.0	<4.0	<4.0	<4.0	--	--	--
		6	--	--	--	--	--	--	1.5	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-15	7/19/01	2.5	--	--	--	--	--	--	1.4	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	1.1	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-16	7/20/01	2.5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-17	7/18/01	2.5	--	--	--	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-18	7/16/01	2.5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-19	7/25/01	4	--	--	--	--	--	--	2.8	<1.0	<1.0	<1.0	<1.0	--	--	--

TABLE 3-2
SUMMARY OF SOIL GAS ANALYTICAL RESULTS - FORMER DUDLEY AND PETTY TRUCK STOP
2060 South Avenue and 1745 Toomes Road
Corning, California

Sample ID	Date	Depth (ft)	Petroleum Related VOCs						Volatile Organic Compounds							
			Benzene	Toluene	Ethyl-benzene	Xylenes	1,3,5-Tri-methyl-benzene	1,2,4-Tri-methyl-benzene	PCE	TCE	DCE	CE	1,1-DCE	Trichloro-fluoro-methane	Acetone	Styrene
			(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)
SB-20	7/25/01	2.5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
		5	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--
SB-21	7/25/01	4	--	--	--	--	--	--	<1.0	1.7	17	4.1	<1.0	--	--	--
SB-22	7/25/01	4	--	--	--	--	--	--	64	<40	6750	78	<40	--	--	--
SB-23	7/25/01	4	--	--	--	--	--	--	1.6	1.3	<1.0	<1.0	<1.0	--	--	--

Notes: -- not analyzed/not available

1,3-Dichlorobenzene detected in SGP-21-6 at 4.5 ppbv
1,4-Dichlorobenzene detected in SGP-21-6 at 4.2 ppbv
1,2-Dichlorobenzene detected in SGP-21-6 at 4.6 ppbv

TABLE 3-3
SUMMARY OF PASSIVE SOIL GAS ANALYTICAL RESULTS
2060 South Avenue and 1745 Toomes Avenue
Corning, California

Sample ID	Date	Depth (ft)	Volatile Organic Compounds											
			Benzene	Toluene	Ethyl Benzene	Xylenes	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	PCE	TCE	DCE	Napthalene	4-Methyl-2-pentanone	2-Methyl-napthalene
			(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)	(ng/ sampler)
P-1	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50	<25
P-2	10/2/03	1	<25	<25	<25	58	42	<25	835	<25	<25	<25	<50	45
P-3	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50	<25
P-4	10/2/03	1	<25/<25	<25/<25	<25/<25	<25/<25	<25/<25	<25/<25	26/<25	<25/<25	<25/<25	<25/<25	<50/<50	<25/<25
P-5	10/2/03	1	<25	44	<25	37	27	34	<25	<25	<25	<25	<25	<25
P-6	10/2/03	1	<25	<25	<25	<25	26	<25	<25	<25	<25	<25	<50	<25
P-7	10/2/03	1	<25	38	<25	<25	27	33	<25	<25	<25	<25	<50	<25
P-8	10/2/03	1	<25/<25	<25/<25	<25/<25	<25/<25	<25/<25	<25/<25	34/39	<25/<25	<25/<25	<25/<25	<50/<50	<25/<25
P-9	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50	<25
P-10	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	27	<50	<25
P-11	10/2/03	1	<25	<25	<25	<25	<25	<25	63	<25	<25	<25	<50	<25
P-12	10/2/03	1	<25	207	<25	36	<25	<25	<25	<25	<25	<25	64	<25
P-13	10/2/03	1	<25	<25	<25	372	<25	<25	<25	<25	<25	<25	<50	<25
P-14	10/2/03	1	<25	45	<25	50	45	61	<25	<25	<25	<25	<50	<25
P-15	10/2/03	1	<25	<25	<25	28	29	34	<25	<25	<25	26	<50	<25
P-16	10/2/03	1	<25/<25	52/113	<25/35	54/178	57/117	67/137	<25/32	<25/<25	<25/<25	<25/<25	<50/<50	<25/<25
P-17	10/2/03	1	<25	<25	<25	<25	212	88	<25	<25	<25	<25	<50	<25
P-18	10/2/03	1	<25/<25	31/28	<25/<25	26/<25	<25/<25	30/<25	<25/<25	<25/<25	<25/<25	<25/<25	<50/<50	<25/<25
P-19	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50	<25
P-20	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50	<25
P-21	10/2/03	1	<25/<25	47/<25	<25/<25	35/<25	<25/<25	35/<25	<25/<25	<25/<25	<25/<25	<25/<25	<50/<50	<25/<25
Trip Blank	10/2/03	1	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50	<25

Notes: ng: nanograms <25/<25: Primary sample results/duplicate sample result

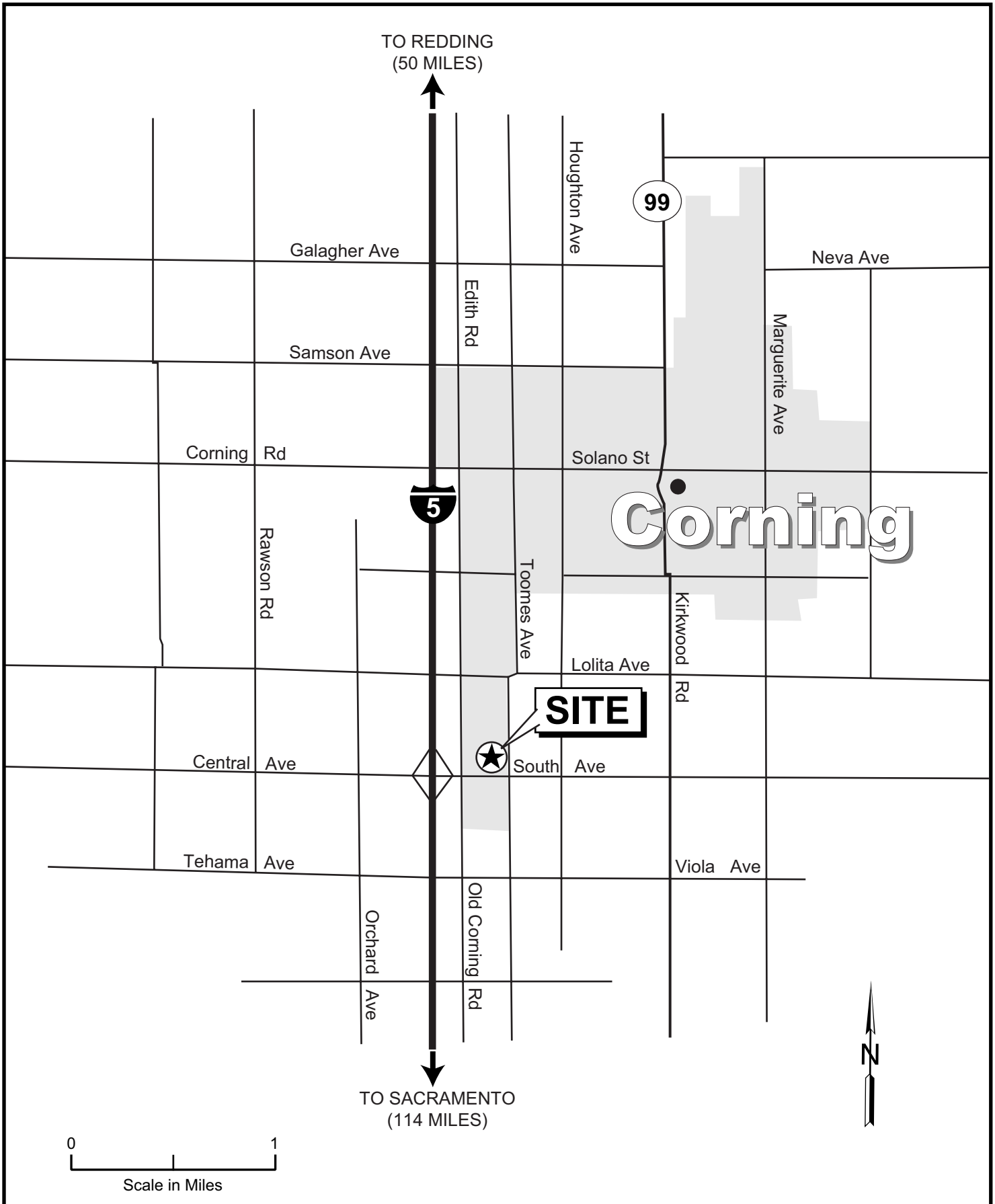
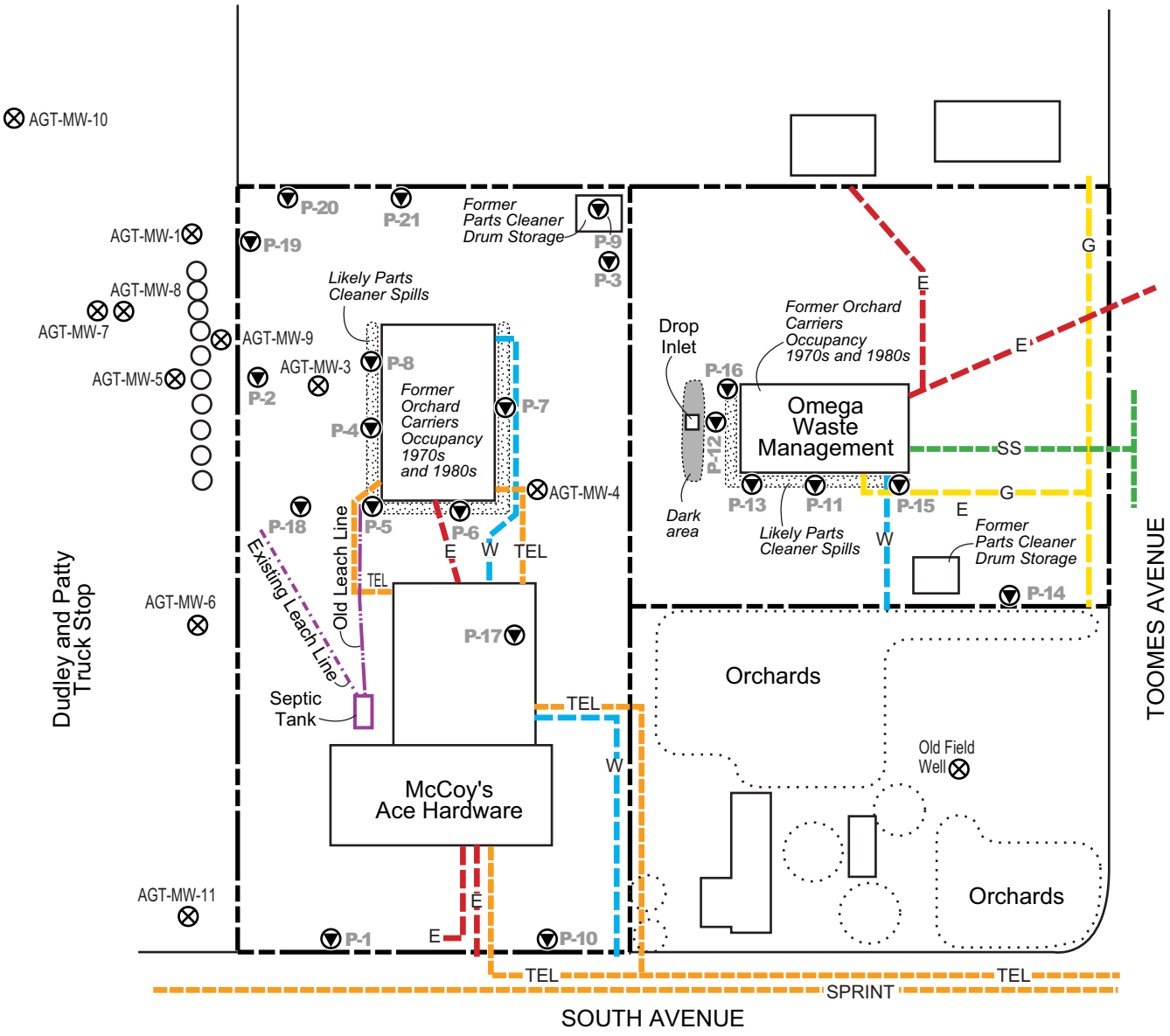


Figure 1-1	**SITE LOCATION MAP**	WEST Environmental Services & Technology
December 2003	South Avenue and Toomes Avenue • Corning, California	



EXPLANATION

- P-6 — Passive soil gas sample location
- AGT-MW-11 — Monitoring well location
- Property boundary line
- G — Gas line
- W — Water line
- SS — Sanitary sewer line
- TEL — Telephone line
- E — Electrical line

N

0 FEET 100

Approximate Scale

Figure 2-1	**SITE PLAN**	WEST Environmental Services & Technology
December 2003	South Avenue and Toomes Avenue • Corning, California	

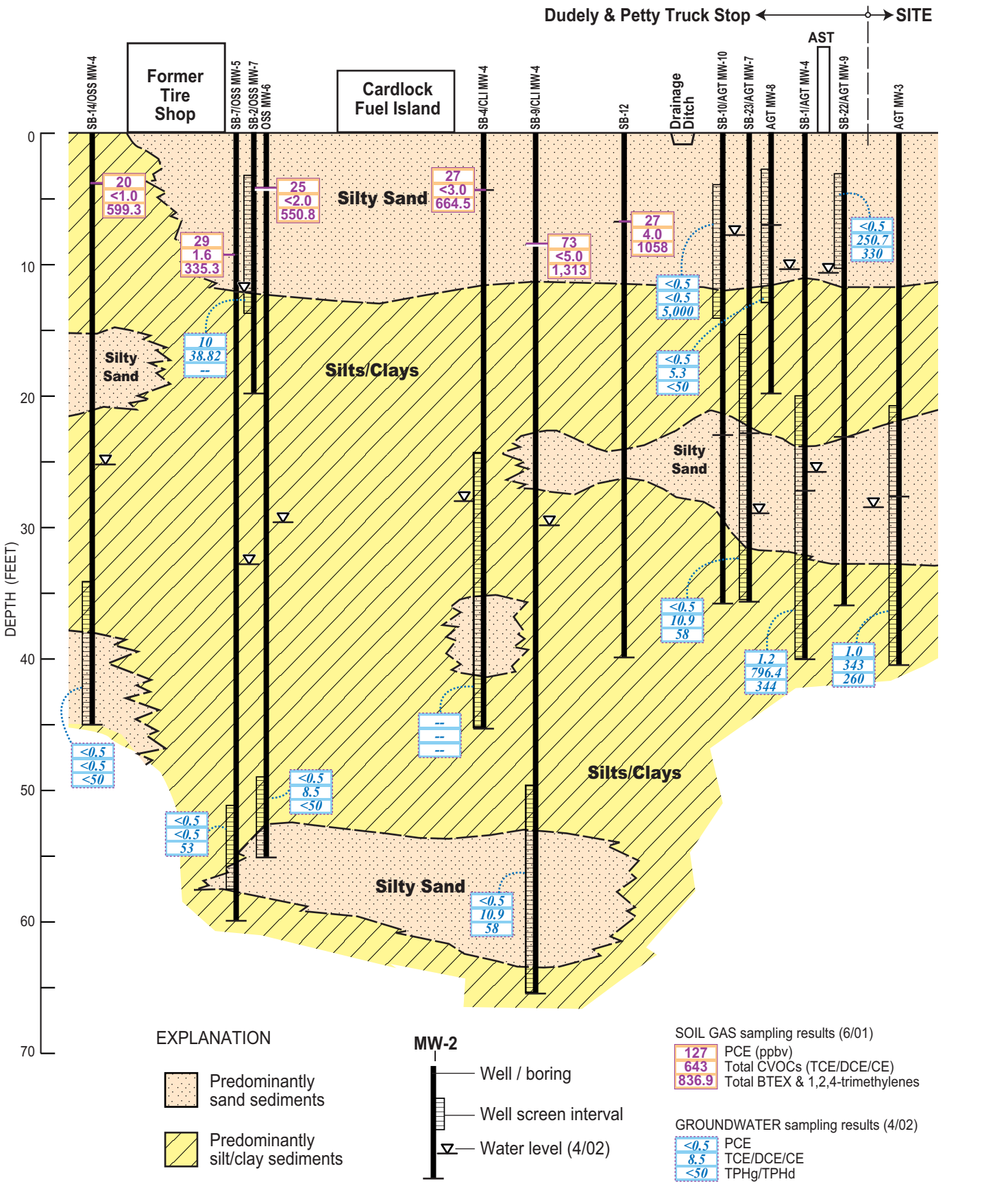
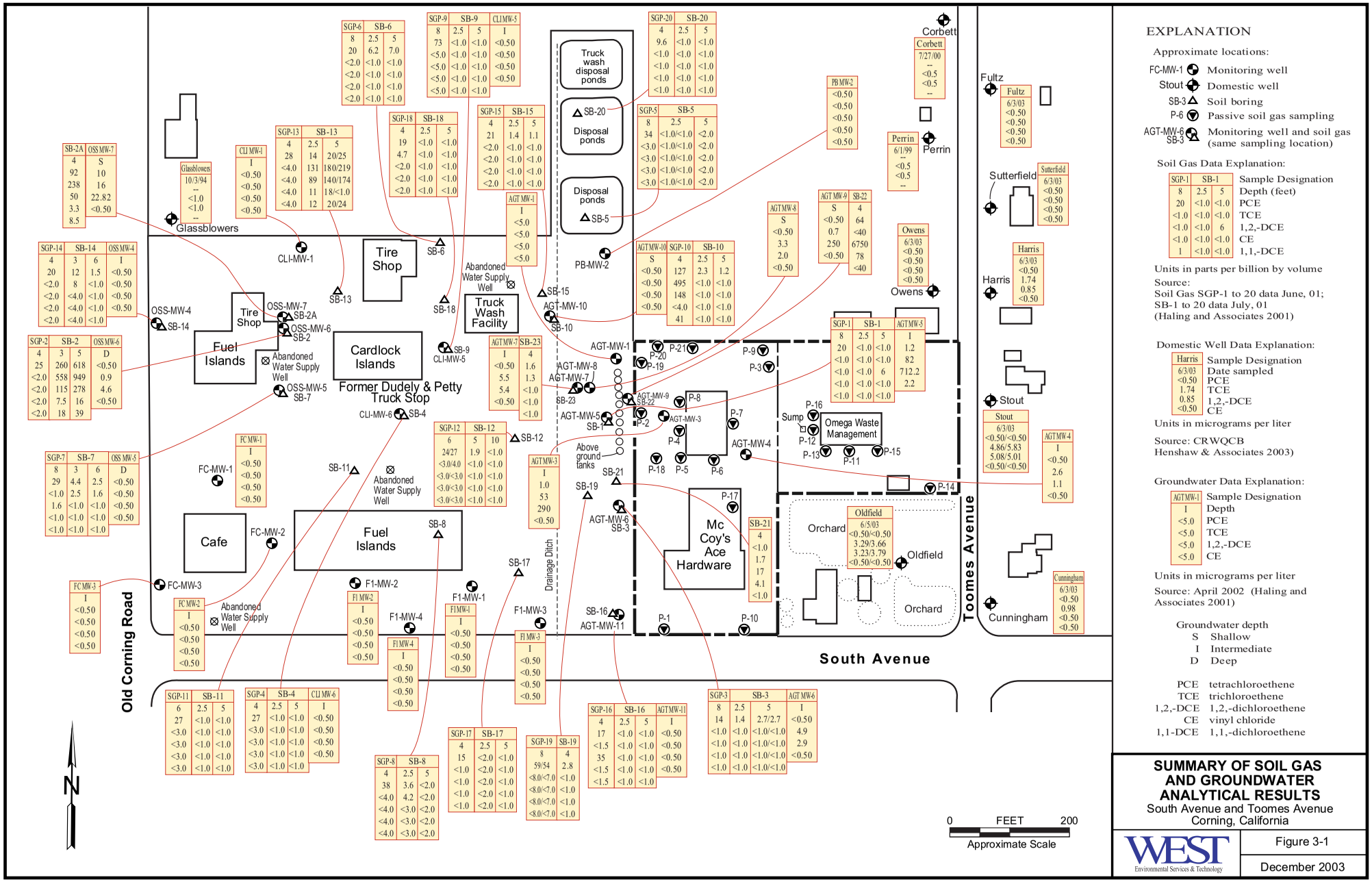


Figure 2-2	**CROSS SECTION**	WEST Environmental Services & Technology
December 2003	South Avenue and Toomes Avenue • Corning, California	



EXPLANATION

Approximate locations:

- FC-MW-1 — Monitoring well
- Stout — Domestic well
- SB-3 — Soil boring
- P-6 — Passive soil gas sampling
- AGT-MW-6 / SB-3 — Monitoring well and soil gas (same sampling location)

Soil Gas Data Explanation:

SGP-1	SB-1		Sample Designation
8	2.5	5	Depth (feet)
20	<1.0	<1.0	PCE
<1.0	<1.0	<1.0	TCE
<1.0	<1.0	6	1,2,-DCE
<1.0	<1.0	<1.0	CE
1	<1.0	<1.0	1,1,-DCE

Units in parts per billion by volume

Source:
Soil Gas SGP-1 to 20 data June, 01;
SB-1 to 20 data July, 01
(Haling and Associates 2001)

Domestic Well Data Explanation:

Harris	Sample Designation
6/3/03	Date sampled
<0.50	PCE
1.74	TCE
0.85	1,2,-DCE
<0.50	CE

Units in micrograms per liter

Source: CRWQCB
Henshaw & Associates 2003)

Groundwater Data Explanation:

AGT MW-1	Sample Designation
I	Depth
<5.0	PCE
<5.0	TCE
<5.0	1,2,-DCE
<5.0	CE

Units in micrograms per liter

Source: April 2002 (Haling and Associates 2001)

Groundwater depth
- S Shallow
- I Intermediate
- D Deep

- PCE tetrachloroethene
- TCE trichloroethene
- 1,2,-DCE 1,2,-dichloroethene
- CE vinyl chloride
- 1,1-DCE 1,1,-dichloroethene

SUMMARY OF SOIL GAS AND GROUNDWATER ANALYTICAL RESULTS

South Avenue and Toomes Avenue
Corning, California

WEST Environmental Services & Technology

Figure 3-1

December 2003

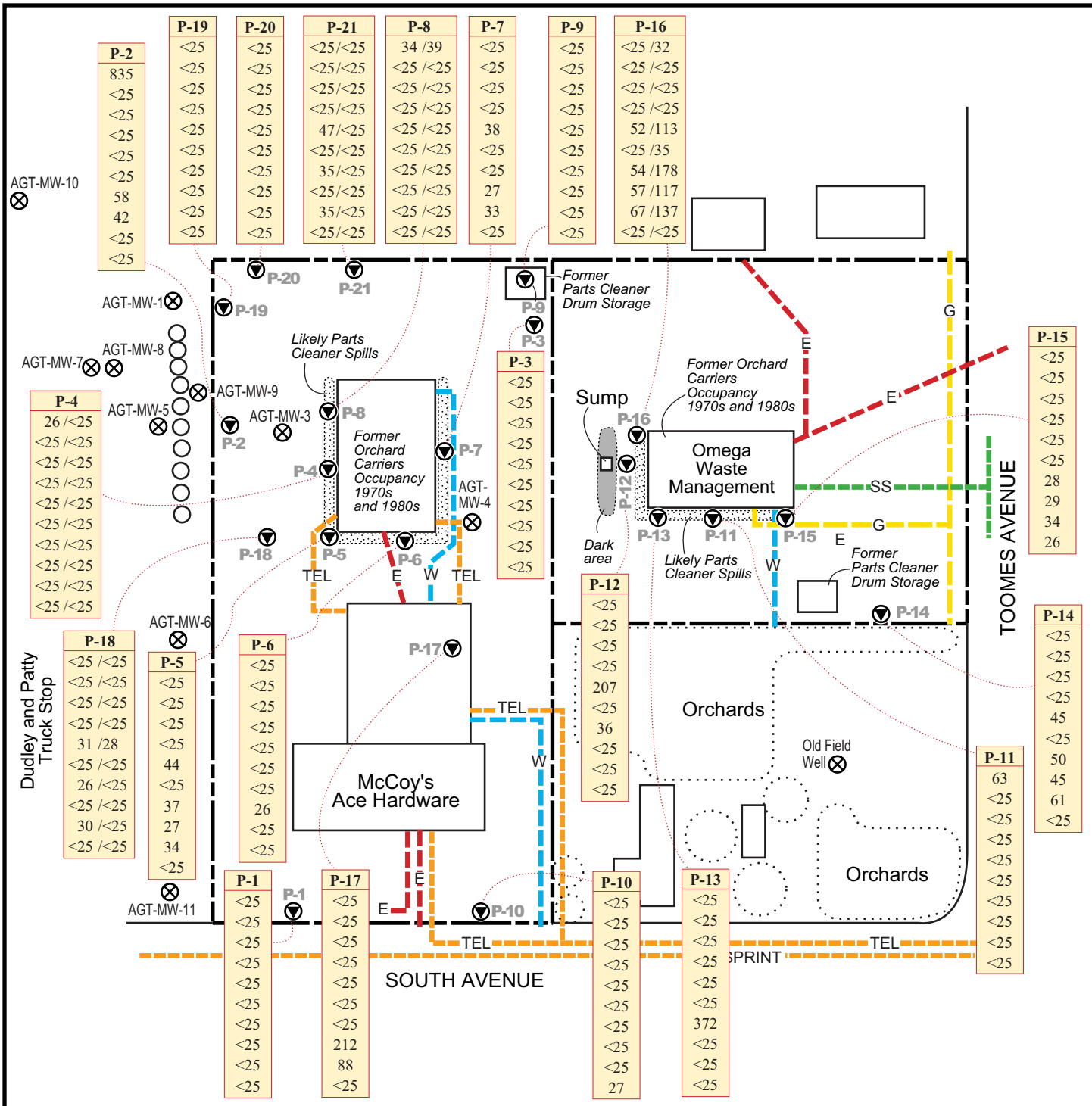


Figure 3-2	**PASSIVE SOIL GAS ANALYTICAL RESULTS**	WEST Environmental Services & Technology
December 2003	South Avenue and Toomes Avenue • Corning, California	

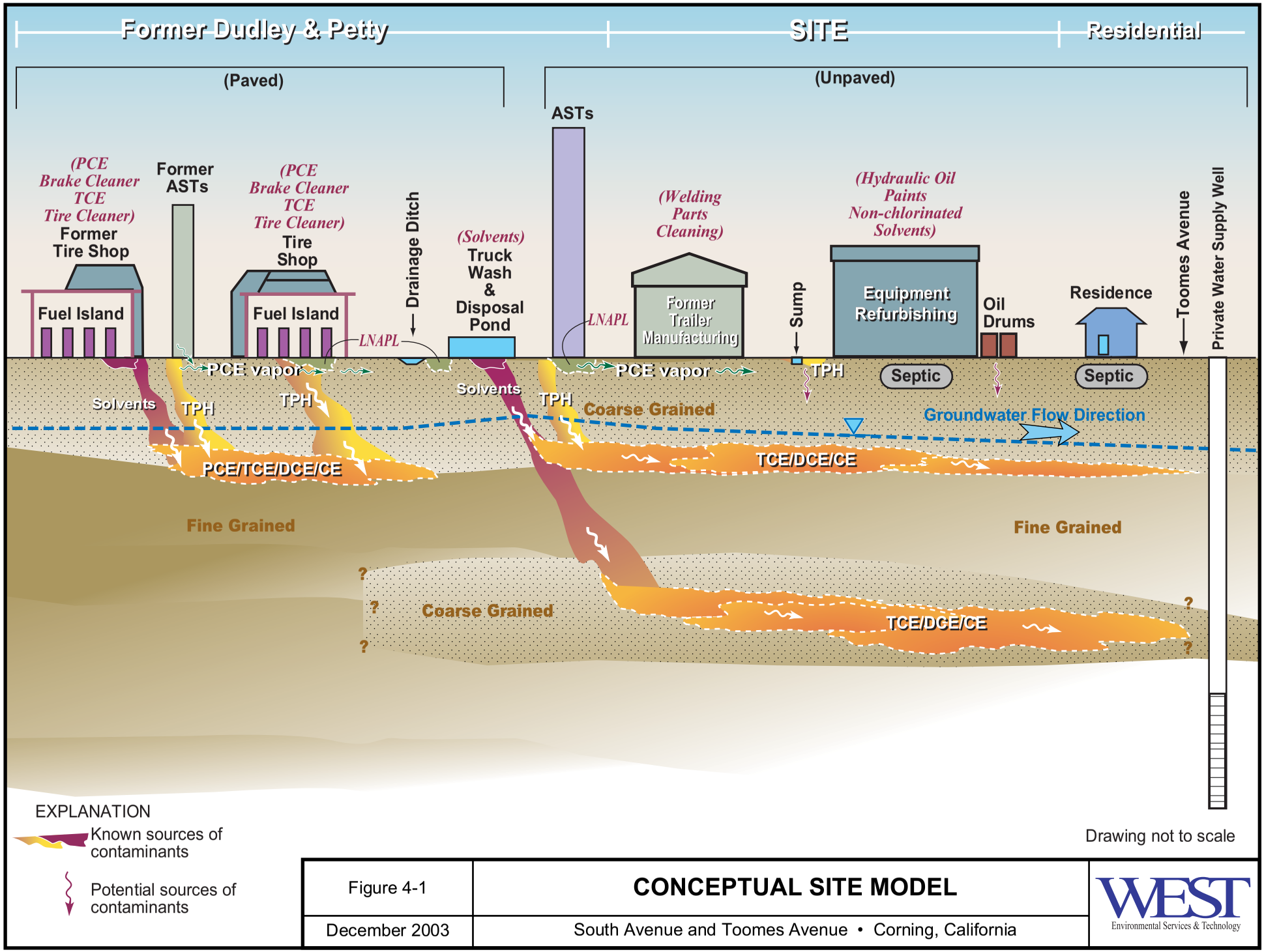
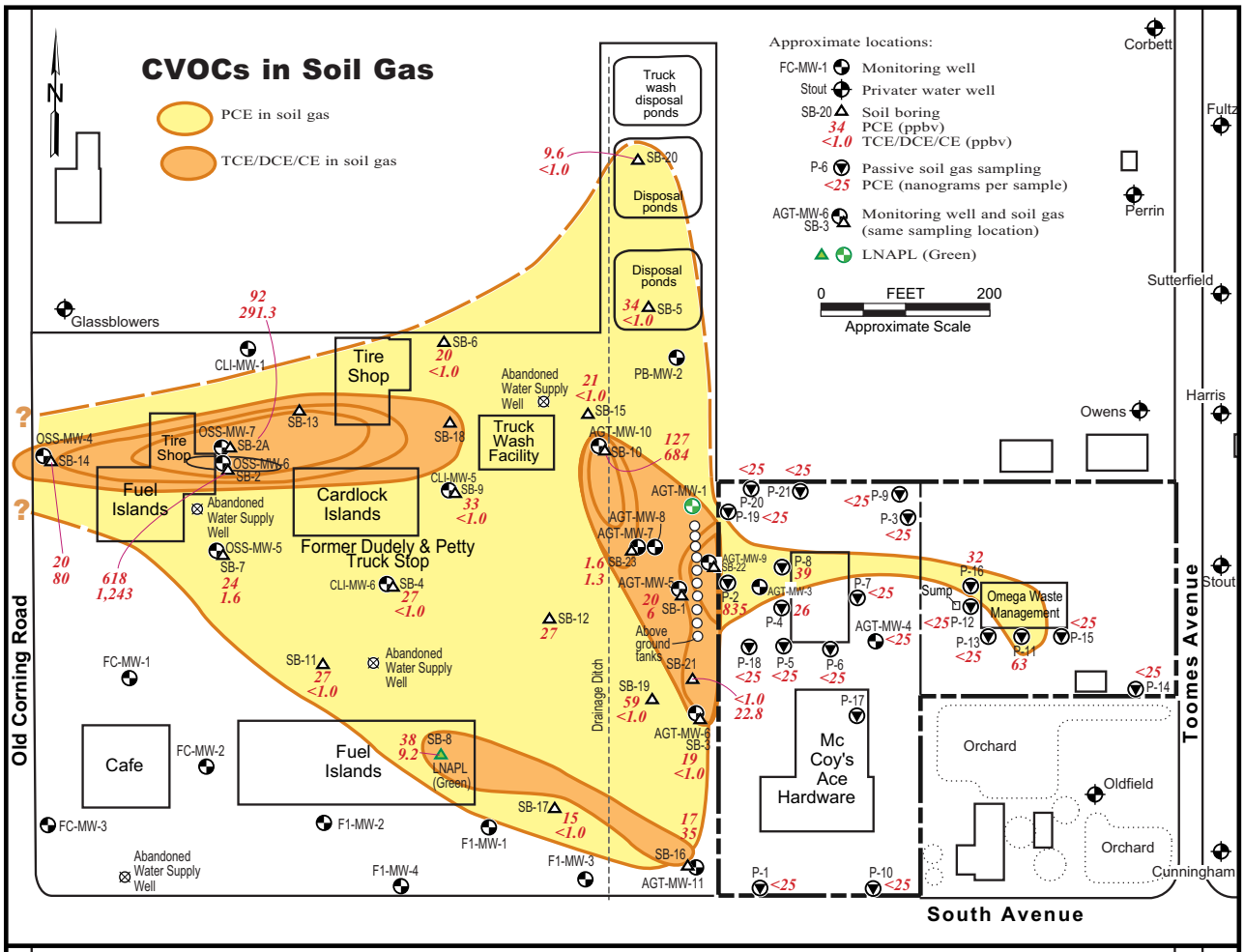


Figure 4-1	**CONCEPTUAL SITE MODEL**	WEST Environmental Services & Technology
December 2003	South Avenue and Toomes Avenue • Corning, California	



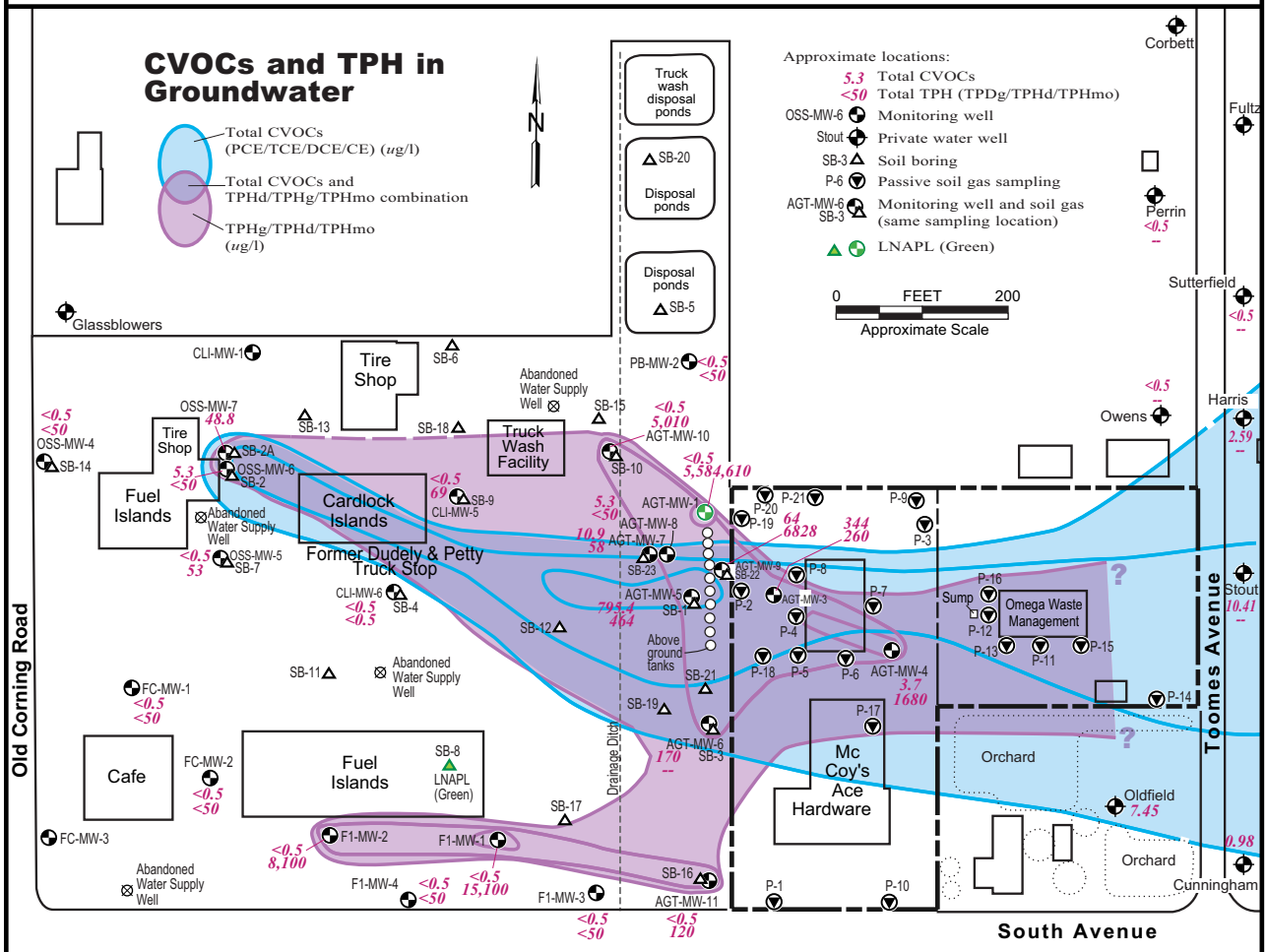


Figure 4-2	**ISOGRAMS OF CVOCs IN SOIL GAS AND GROUNDWATER**	WEST Environmental Services & Technology
December 2003	South Avenue and Toomes Avenue • Corning, California	

APPENDIX A
HISTORICAL AERIAL PHOTOGRAPHS

APPENDIX B
LABORATORY DATA CERTIFICATES AND CHAIN OF CUSTODY FORMS

BEACON Report No. EM1608

EMFLUX® Passive Soil-Gas Survey

GREBEN.CORNING
CORNING, CA

Prepared for

West, Inc.
828 Mission Avenue
San Rafael, CA 94901

by

Beacon Environmental Services, Inc.
323 Williams Street
Suite D
Bel Air, MD 21014

October 16, 2003

Applying Results from Soil-Gas Surveys

The utility of soil-gas surveys is directly proportional to their accuracy in reflecting and representing changes in the subsurface concentrations of source compounds. Passive soil-gas survey results are the mass collected from the vapor-phase emanating from the source. The vapor-phase is merely a fractional trace of the source, so, as a matter of convenience, the units used in reporting detection values from EMFLUX® surveys are smaller than those employed for source-compound concentrations.

The critical fact is that, whatever the relative concentrations of source and associated soil gas, best results are realized when the ratio of soil-gas measurements to actual subsurface concentrations remains as close to constant as the real world permits. It is the reliability and consistency of this ratio, not the particular units of mass (*e.g.*, nanograms) that determine usefulness. Thus, BEACON emphasizes the necessity of conducting — at minimum — follow-on intrusive sampling at one or two points which show relatively high EMFLUX® values to obtain corresponding concentrations of soil and ground-water contaminants. These correspondent values furnish the basis for approximating the required ratio. Once that ratio is established, it can be used in conjunction with EMFLUX® measurements (regardless of the units adopted) to estimate subsurface contaminant concentrations across the survey field. It is important to keep in mind, however, that specific conditions at individual sample points, including soil porosity and permeability, depth to contamination, and perched ground water, can have significant impact on soil-gas measurements at those locations.

When EMFLUX® Surveys are handled in this way, the data provide information that can yield substantial savings in drilling costs and in time. They furnish, among other things, a checklist of compounds expected at each survey location and help to determine how and where drilling budgets can most effectively be spent.

Table 1

EMFLUX Passive Soil-Gas Survey
Greben.Corning

Results in Nanograms (ng)
Analytical Method: EPA Method 8260
Analysis Completed: October 12, 2003

SAMPLE NO.	P-1	P-2	P-3	P-4	P4-DUP	P-5
COMPOUNDS						
Ethylbenzene	<25	<25	<25	<25	<25	<25
4-Methyl-2-Pentanone(MIBK)	<50	<50	<50	<50	<50	<50
2-Methylnaphthalene	<25	**45**	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	**835**	<25	26	<25	<25
Toluene	<25	<25	<25	<25	<25	**44**
1,2,4-Trimethylbenzene	<25	**42**	<25	<25	<25	**27**
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	**34**
Xylenes (Total)	<25	**58**	<25	<25	<25	**37**

SAMPLE NO.	P-6	P-7	P-8	P8-DUP	P-9	P-10
COMPOUNDS						
Ethylbenzene	<25	<25	<25	<25	<25	<25
4-Methyl-2-Pentanone(MIBK)	<50	<50	<50	<50	<50	<50
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	**27**
Tetrachloroethene	<25	<25	**34**	**39**	<25	<25
Toluene	<25	**38**	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**26**	**27**	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	**33**	<25	<25	<25	<25
Xylenes (Total)	<25	<25	<25	<25	<25	<25

Reported Quantitation Level = 25 nanograms
Reported Quantitation Level = 50 nanograms for MIBK

Table 1
(continued)
EMFLUX Passive Soil-Gas Survey
Greben.Corning

Results in Nanograms (ng)
Analytical Method: EPA Method 8260
Analysis Completed: October 12, 2003

SAMPLE NO.	P-11	P-12	P-13	P-14	P-15	P-16
COMPOUNDS						
Ethylbenzene	<25	<25	<25	<25	<25	<25
4-Methyl-2-Pentanone(MIBK)	<50	**64**	<50	<50	<50	<50
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	**26**	<25
Tetrachloroethene	**63**	<25	<25	<25	<25	<25
Toluene	<25	**207**	<25	**45**	<25	**52**
1,2,4-Trimethylbenzene	<25	<25	<25	**45**	**29**	**57**
1,3,5-Trimethylbenzene	<25	<25	<25	**61**	**34**	**67**
Xylenes (Total)	<25	**36**	**372**	**50**	**28**	**54**

SAMPLE NO.	P16-DUP	P-17	P-18	P18-DUP	P-19	P-20
COMPOUNDS						
Ethylbenzene	**35**	<25	<25	<25	<25	<25
4-Methyl-2-Pentanone(MIBK)	<50	<50	<50	<50	<50	<50
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**32**	<25	<25	<25	<25	<25
Toluene	**113**	<25	**31**	**28**	<25	<25
1,2,4-Trimethylbenzene	**117**	**212**	<25	<25	<25	<25
1,3,5-Trimethylbenzene	**137**	**88**	**30**	<25	<25	<25
Xylenes (Total)	**178**	<25	**26**	<25	<25	<25

Reported Quantitation Level = 25 nanograms
Reported Quantitation Level = 50 nanograms for MIBK

Table 1
(continued)
EMFLUX Passive Soil-Gas Survey
Greben.Corning

Results in Nanograms (ng)
Analytical Method: EPA Method 8260
Analysis Completed: October 12, 2003

SAMPLE NO.	P-21	P21-DUP	Trip Blank
COMPOUNDS			
Ethylbenzene	<25	<25	<25
4-Methyl-2-Pentanone(MIBK)	<50	<50	<50
2-Methylnaphthalene	<25	<25	<25
Naphthalene	<25	<25	<25
Tetrachloroethene	<25	<25	<25
Toluene	**47**	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25
1,3,5-Trimethylbenzene	**35**	<25	<25
Xylenes (Total)	**35**	<25	<25

Reported Quantitation Level = 25 nanograms
Reported Quantitation Level = 50 nanograms for MIBK

Attachment 1

Laboratory Report

MARYLAND SPECTRAL SERVICES, INC.

1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	P-1	P-2	P-3	P-4	P4-DUP	P-5
	EM1608	EM1608	EM1608	EM1608	EM1608	EM1608
LAB SAMPLE ID:	031008101	031008102	031008103	031008104	031008104D	031008105
RECEIVED DATE:	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02
ANALYSIS DATE:	10/11/03	10/11/03	10/11/03	10/11/03	10/11/03	10/11/03
FILE NAME:	1008101	1008102	1008103	1008104	1008104D	1008105
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	25 U	25 U	25 U	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (MEK)	50 U	50 U	50 U	50 U	50 U	50 U
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U	25 U	25 U
Chloromethane	50 U	50 U	50 U	50 U	50 U	50 U
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (cis)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (trans)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U	50 U	50 U	50 U
4-Methyl-2-Pentanone(MIBK)	50 U	50 U	50 U	50 U	50 U	50 U
2-Methylnaphthalene	25 U	45	25 U	25 U	25 U	25 U
Naphthalene	25 U	25 U	25 U	25 U	25 U	25 U
Styrene	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	25 U	835	25 U	26	25 U	25 U
Toluene	25 U	25 U	25 U	25 U	25 U	44
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2,4-Trimethylbenzene	25 U	42	25 U	25 U	25 U	27
1,3,5-Trimethylbenzene	25 U	25 U	25 U	25 U	25 U	34
Xylenes (Total)	25 U	58	25 U	25 U	25 U	37

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.

1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	P-6	P-7	P-8	P8-DUP	P-9	P-10
	EM1608	EM1608	EM1608	EM1608	EM1608	EM1608
LAB SAMPLE ID:	031008106	031008107	031008108	031008108D	031008109	031008110
RECEIVED DATE:	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02
ANALYSIS DATE:	10/11/03	10/11/03	10/11/03	10/11/03	10/11/03	10/11/03
FILE NAME:	1008106	1008107	1008108	1008108D	1008109	1008110
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	25 U	25 U	25 U	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (MEK)	50 U	50 U	50 U	50 U	50 U	50 U
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U	25 U	25 U
Chloromethane	50 U	50 U	50 U	50 U	50 U	50 U
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (cis)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (trans)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U	50 U	50 U	50 U
4-Methyl-2-Pentanone(MIBK)	50 U	50 U	50 U	50 U	50 U	50 U
2-Methylnaphthalene	25 U	25 U	25 U	25 U	25 U	25 U
Naphthalene	25 U	25 U	25 U	25 U	25 U	27
Styrene	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	25 U	25 U	34	39	25 U	25 U
Toluene	25 U	38	25 U	25 U	25 U	25 U
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2,4-Trimethylbenzene	26	27	25 U	25 U	25 U	25 U
1,3,5-Trimethylbenzene	25 U	33	25 U	25 U	25 U	25 U
Xylenes (Total)	25 U	25 U	25 U	25 U	25 U	25 U

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.

1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	P-11	P-12	P-13	P-14	P-15	P-16
	EM1608	EM1608	EM1608	EM1608	EM1608	EM1608
LAB SAMPLE ID:	031008111	031008112	031008113	031008114	031008115	031008116
RECEIVED DATE:	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02
ANALYSIS DATE:	10/11/03	10/11/03	10/11/03	10/11/03	10/12/03	10/12/03
FILE NAME:	1008111	1008112	1008113	1008114	1008115	1008116
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	25 U	25 U	25 U	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (MEK)	50 U	50 U	50 U	50 U	50 U	50 U
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U	25 U	25 U
Chloromethane	50 U	50 U	50 U	50 U	50 U	50 U
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (cis)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (trans)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U	50 U	50 U	50 U
4-Methyl-2-Pentanone(MIBK)	50 U	64	50 U	50 U	50 U	50 U
2-Methylnaphthalene	25 U	25 U	25 U	25 U	25 U	25 U
Naphthalene	25 U	25 U	25 U	25 U	26	25 U
Styrene	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	63	25 U	25 U	25 U	25 U	25 U
Toluene	25 U	207	25 U	45	25 U	52
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2,4-Trimethylbenzene	25 U	25 U	25 U	45	29	57
1,3,5-Trimethylbenzene	25 U	25 U	25 U	61	34	67
Xylenes (Total)	25 U	36	372	50	28	54

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.

1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	P16-DUP	P-17	P-18	P18-DUP	P-19	P-20
	EM1608	EM1608	EM1608	EM1608	EM1608	EM1608
LAB SAMPLE ID:	031008116	031008117	031008118	031008118D	031008119	031008120
RECEIVED DATE:	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02	10/08/02
ANALYSIS DATE:	10/12/03	10/12/03	10/12/03	10/12/03	10/12/03	10/12/03
FILE NAME:	1008116D	1008117	1008118	1008118D	1008119	1008120
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	25 U	25 U	25 U	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (MEK)	50 U	50 U	50 U	50 U	50 U	50 U
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U	25 U	25 U
Chloromethane	50 U	50 U	50 U	50 U	50 U	50 U
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (cis)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (trans)	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	35	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U	50 U	50 U	50 U
4-Methyl-2-Pentanone(MIBK)	50 U	50 U	50 U	50 U	50 U	50 U
2-Methylnaphthalene	25 U	25 U	25 U	25 U	25 U	25 U
Naphthalene	25 U	25 U	25 U	25 U	25 U	25 U
Styrene	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	32	25 U	25 U	25 U	25 U	25 U
Toluene	113	25 U	31	28	25 U	25 U
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2,4-Trimethylbenzene	117	212	25 U	25 U	25 U	25 U
1,3,5-Trimethylbenzene	137	88	30	25 U	25 U	25 U
Xylenes (Total)	178	25 U	26	25 U	25 U	25 U

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.

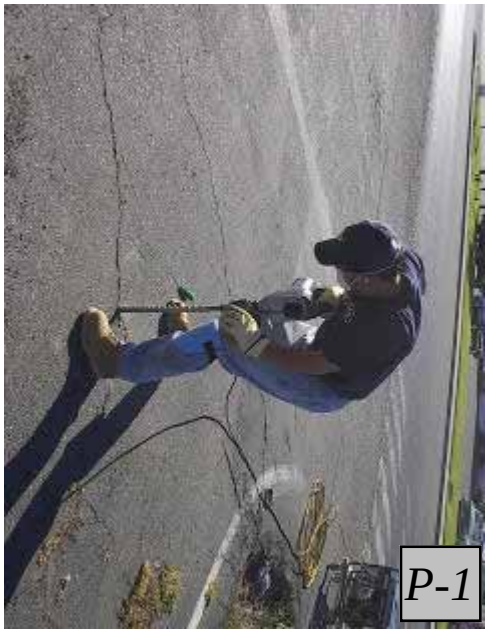
1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	P-21	P21-DUP	TRIP BLANK	VBLK1011D1	VBLK1012D1
	EM1608	EM1608	EM1608		
LAB SAMPLE ID:	031008121	031008121D	031008122	METHOD BL.	METHOD BL.
RECEIVED DATE:	10/08/02	10/08/02	10/08/02		
ANALYSIS DATE:	10/12/03	10/12/03	10/11/03	10/11/03	10/12/03
FILE NAME:	1008121	1008121D	1008122	1011VBLKD1	1012VBLKD1
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS					
Benzene	25 U	25 U	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U
2-Butanone (MEK)	50 U	50 U	50 U	50 U	50 U
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U	25 U
Chloromethane	50 U	50 U	50 U	50 U	50 U
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (cis)	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (trans)	25 U	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U	50 U	50 U
4-Methyl-2-Pentanone(MIBK)	50 U	50 U	50 U	50 U	50 U
2-Methylnaphthalene	25 U	25 U	25 U	25 U	25 U
Naphthalene	25 U	25 U	25 U	25 U	25 U
Styrene	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	25 U	25 U	25 U	25 U	25 U
Toluene	47	25 U	25 U	25 U	25 U
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U
1,2,4-Trimethylbenzene	25 U	25 U	25 U	25 U	25 U
1,3,5-Trimethylbenzene	35	25 U	25 U	25 U	25 U
Xylenes (Total)	35	25 U	25 U	25 U	25 U

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

APPENDIX C
SITE PHOTOGRAPHS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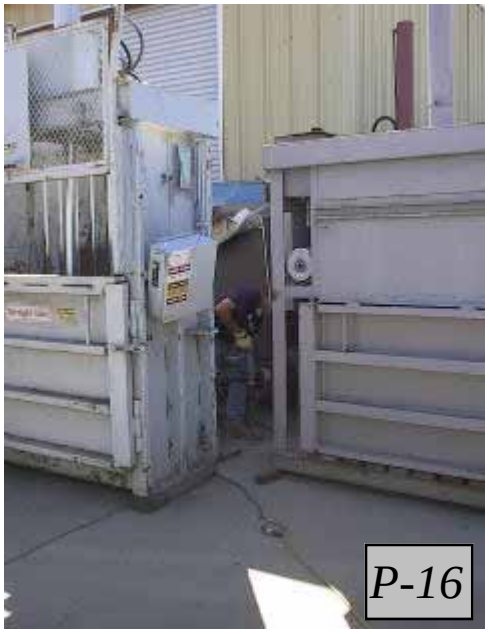
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